



FRIDAY, SEPTEMBER 7, 1877.

The Kentucky River Bridge.

In the *Railroad Gazette* of Jan. 19 of this year, we gave an account of the method devised for erecting this bridge. Since that time we have received a series of photographs taken by Mr. James Mullen, of Lexington, Ky., showing the appearance of the structure at the different stages of its progress. From some of these we have had engravings made, the first of which is published this week. The others will follow in successive weeks. They show very vividly the boldness of this engineering project, which, it can now be added, has been carried out with entire success, reflecting great credit upon the engineers to whose skill the conception and the execution of the work is due.

Those who read the article referred to above will remember that the bridge is built across the Kentucky River on the line of the Cincinnati Southern Railway, and that the location regarded as the most favorable for crossing that stream was the

give you for publication in the *North American Review* such results of my observation and experience during the recent disastrous disturbances in this country as may appear to have some bearing upon the general interests of the community, finds me absorbed in imperative duties which make it difficult for me to comply with your wishes. But the issues and results of these deplorable events are of such importance to the prosperity and happiness of the American people, without distinction of class, and to the very existence of our social and political institutions, that no one perhaps who happens, through whatever circumstances, to have been brought into immediate contact with these events, should allow any personal considerations to restrain him, when the proper occasion is presented, from expressing his candid and deliberate views in regard to them. I therefore take pleasure in giving you the following statement, which must be taken for what it is worth by the thoughtful readers of the *North American Review*, and my hope is that it may be found of some use in helping the public in this country to form just and practical conclusions on the subject:

On the 16th of July it became known that the firemen and freight brakemen of the Baltimore & Ohio Railroad were on a strike at Martinsburg, W. Va., and that no freight trains were allowed to pass that point in either direction. This proved to be the beginning of a movement which spread with great rapidity from New York to Kansas, and from Michigan to Texas, which had placed an embargo on the entire freight traffic of more than twenty thousand miles of railway, put passenger travel and the movement of the United States mails at the mercy of a mob, subjected great commercial centres like Chicago and St. Louis to the violent disturbance of all their

ity of passion, played upon by designing and mischievous leaders, can explain the destruction of vast quantities of railroad equipment absolutely necessary to the transaction of its business, by men whose complaint was that the business done by the full equipment in possession of the railways did not pay them sufficient compensation for their labor. During the greater part of our century of national existence we have enjoyed such unbroken prosperity that we had perhaps come to expect exemption from many of the worst problems which perplex other and older civilization. The vast area of public land open to cultivation and settlement had steadily drained off not only our own surplus population, but that of other countries, and the rapid extension of our railway system, by furnishing markets for the productions of all parts of the country, had increased the national wealth and built up a general prosperity. But for the civil war this state of things might have continued to exist; but the waste of human life and the destruction of property which accompanied that war, the loss of real productive power, and the creation of large debts, national, state and municipal, involving heavy taxation to meet them, have entailed burdens upon us which were lightly felt during the feverish excitement of the civil conflict, but the weight of which became suddenly onerous and almost intolerable when the financial condition of the country was so seriously disturbed by the panic of 1873. In a few hours the credit upon which the fabric of our apparent prosperity rested was almost entirely destroyed, the capital which had been fairly lent to all enterprises offering even a show of prospective profit was suddenly withdrawn. Since that time the country has been obliged to meet its debts, not by renewals but by actual payments from its resources.



ERECTION OF THE KENTUCKY RIVER BRIDGE:

Half of Northern Span Just before Reaching Temporary Wooden Pier.

same as that selected by the late John A. Roebling about twenty-three years ago. At this point he made preparations for the construction of a railroad suspension bridge of 1,236 ft. span crossing the canon of the Kentucky River, which is here 275 feet deep. The towers for his bridge were erected, but no further progress was made, owing to the financial crash of 1857.

As the reasons for adopting the plan proposed by the Baltimore Bridge Company were very fully given in the article referred to, no further statement of them need be made now. The bridge consists of three spans of 375 feet each, the ends of which are supported on two iron towers resting on stone piers in the stream. The method of erection was to build out one half of each of the shore spans in the form of a cantilever and then let it rest on a temporary wooden tower which was erected first on the north side of the stream and then removed to the south side. The engraving in this number represents the north half span just before it reached the temporary wooden tower. Next week we will show the progress of this span towards the permanent iron tower and on the completion of the publication of the series of engravings, we will give a further account of the erection of this remarkable structure.

The President of the Pennsylvania Railroad on the Recent Strikes.

The following is the letter from President Scott published in the September-October number of the *North American Review*:

PHILADELPHIA, Aug. 13, 1877.

The request that you have done me the honor to make, to

business relations, and made the great manufacturing city of Pittsburgh for twenty-four hours such a scene of riot, arson and bloodshed as can never be erased from the memory of its people. In Baltimore, Reading, Scranton, Cleveland, Indianapolis, Fort Wayne, Columbus, Cincinnati, Louisville, and many points in New York and New Jersey the laws were set at defiance, the property of the various railway companies seized, injured, or destroyed, the civil authorities overpowered or overawed, and in many cases compelled to call upon the military power of the States to protect persons and property. This call could not in all cases be fully met. The Governors of West Virginia, Maryland and Pennsylvania acted with great promptness, but found the military organizations of their States, although very efficient for the suppression of any ordinary outbreak, unable to suppress what rapidly grew from a riot to an insurrection, and were compelled to invoke the aid of the United States government. To this the President at once responded to the extent of the force at his command, and the presence of detachments of the regular army and navy hastily gathered from all quarters and hurried to the points most seriously threatened aided largely in securing the comparative quiet which now prevails within the borders of those States. Had it not been, however, that in many communities the municipal authorities acted with great nerve and efficiency, and were supported by organizations of citizens, and by a public sentiment determined to maintain law and order at any cost, the troubles to be encountered would no doubt have been much more serious.

I do not wish, and happily it is not necessary, to fill your pages with the mere recital of the distressing cases of violence and outrage which marked the course of these riots unexampled in American history. Suffice it to say that the conduct of the rioters is entirely inconsistent with the idea that this movement could have been directed by serious, right-minded men bent on improving the condition of the laboring classes. How wages could be improved by destroying property, the existence of which alone made the payment of any wages at all possible, it is difficult to understand. Nothing but the insan-

Every important industry in the country has been compelled to practice the closest and most rigid economies in order to escape marketing its products at an absolute loss. The cotton and woollen mills of New England, the furnaces and mines of Pennsylvania, Ohio, Indiana, Illinois and Missouri, have all passed through the same experience and have the same story to tell. The capital which communist orators so eloquently denounce has yielded such scant returns as the men who pretend to dictate the scale of adequate wages for labor would regard with disdain. In every manufacturing state in the country it is perfectly well known that many establishments have been kept in operation simply that the men might be employed. This has been done often without one iota of profit to the owners. During the last winter the large rolling-mills in Pennsylvania must have been closed, and thousands of laboring men reduced to idleness, and possibly want, had not the railroads—which, during the recent madness that swept over the country, were selected for mob violence and opprobrium—come to their relief by anticipating their wants and by giving orders for rails months in advance of their actual requirements. Political economists may object that it was not an act of charity in which great corporations had any right to indulge, but it is certain that without this thousands of laboring men in the State of Pennsylvania alone would have suffered severely. Not only this, but in order to aid the industries which are now so much depressed, and to enable manufacturers to continue business and thus keep their men steadily employed, the railways of the country have reduced their local freight charges to the lowest point ever known, and have moved the heavy materials used in making iron, steel, glass and other products at rates barely above the actual cost of transportation; and yet, by a curiously inverted process of reasoning, the course thus pursued by the railways has been most bitterly denounced by the self-constituted mouthpieces of the very classes which have alone profited by it.

It is safe to assert that so far as the special class of railway employes, firemen and freight brakemen is concerned, there

are, perhaps, but few railway companies in the United States which are not to-day employing a force of train hands larger than their actual business requires. With the falling off of revenue from traffic, the question was presented at once to railway managers whether the force employed on the lines should be reduced to that actually necessary for the work to be done, in which case greater compensation might have been paid to the men so retained, while others equally deserving must have been turned adrift, or whether it would not be both wiser and kinder to retain as many men as possible in the service, by so allotting the work as to permit all to earn a sum, smaller indeed than in the past, yet it was hoped sufficient to support themselves and their families during the severe period of depression, to the near close of which railway managers, in common with all the business men of the country, perhaps too confidently looked forward. This course, as I have said, may be condemned by the hard rules of political economy. The experience of the past few weeks seems to show that it has commended itself as little to those whom it was intended to relieve, and to whom alone, if anybody, it has been beneficial.

It must not for a moment, however, be understood that the greatest portion, or indeed any considerable portion, of the outrages upon life and property which have disgraced our recent history were actually committed by railway employees. It is not true that the majority, or even any large portion, of these men have been disloyal to the trust reposed in them. Probably ninety per cent. of the men on all the important lines of the country where strikes occurred were faithful to their duties, and either remained at work or stood ready to resume it as soon as they were relieved from the actual intimidation to which they were subjected by the rioters and their leaders. It was the dissatisfied element—which exists in that branch of industry as in all others—which perpetrated or allowed the perpetration of most of the overtacts of violence, such as stopping trains, forcing men therefrom, uncoupling cars, disconnecting engines, and other lawless doings of the kind, and which made itself amenable also to the charge of directly attacking the interests of the government and society at large as well as of the railway companies. As General Hurlbut, of Illinois, so forcibly expresses it, in a paper recently published, "they permitted themselves to be the nucleus around which the idle, vicious and criminal element could gather. Reinforced by these dark and disreputable allies they destroyed property, stopped commerce, deranged the mails, burned great public buildings, broke up tracks, and thus paralyzed the natural circulation of the commonwealth." It is in the menace to the general interests of society involved in these disturbances that the real gravity of the situation with which this country is now called to deal exists. "The railroad system is to-day a supreme necessity to maintain life, furnish ready markets, and to bring about the enormous interchange of products which makes the country one. Stop it, and in ten days many parts of the country would near the starvation point and within a month there would be no hamlet in the vast territory drained by these channels, but would feel to the core of its business the effects of the stoppage of this regular and usual circulation."

The enormous mechanical changes and progress of the past century have brought about a complete revolution, so gradual that perhaps it has not been generally apprehended, in the very condition of things in the United States. The water lines, which, at the date of the framing of the constitution, were our important channels of internal commerce, have been almost superseded by the new iron highways. Upon these is borne a traffic so essentially national, so closely interwoven with the interests not only of our own, but other countries, that it demands the most efficient and speedy protection against all unlawful interference. Grain and other agricultural products of Iowa, Minnesota and Illinois, the wool, wine and bullion of California, Nevada and Utah, the cotton and other products of Texas, Louisiana, Mississippi and Tennessee are largely carried over the railways to New York, Boston, Philadelphia, Baltimore and other Atlantic cities, much of it for transshipment to Europe, while in return the manufacturers of New England and the Middle States, with our importations from the various countries of the world, the basis of our national customs revenue, reach by the same railways all parts of the great West and South. Certainly this great inland commerce, both in tonnage and value, is of such vast proportions, and requires for its successful management such absolute and uninterrupted freedom of movement, that the public to which the traffic belongs is entitled to instant and effective protection against all violent interruption, in the first place, from the proper local authorities and the state itself, and in addition thereto, when their force is found inadequate, as it has been found in so many cases during the recent troubles, from the government of the United States.

It is well known that the government uses the railway lines of the country both as postal and military highways, in such form as its interests may require. The constitution of the United States imposes upon the government the duty of thoroughly protecting inter-State commerce. When it is considered that the stock and bondholders of the various railway companies, whenever the interests of the government required it, paid taxes upon their coupons, their dividends and their gross receipts, that they promptly met every call made by the federal authorities, and that the entire equipment of the various lines was often placed at the disposal of the government for the prompt movement of the national forces and their supplies to the exclusion often of other and more profitable traffic, it would seem but a matter of equity that the government should insure such protection to these railways as would preserve their usefulness and keep them always in condition to render similar services when they may be required. But over and beyond such considerations as these the absolute dependence of the whole community upon this great system of railways for almost its very existence as a civilized body would seem to impose upon the federal government in the last resort the supreme duty of preventing any lawless and violent interference with the regular and certain operation of every railway in the United States. This insurrection, which extended through fourteen States, and in many cases successfully defied the local authorities, presents a state of facts almost as serious as that which prevailed at the outbreak of the civil war. Unless our own experience is to differ entirely from other countries—and it is not easy to see why it should, with the increasing population of our large cities and business centres, and the inevitable assemblage at such points of the vicious and evil-disposed—the late troubles may be but the prelude to other manifestations of mob violence, with this added peril, that now, for the first time in American history has an organized mob learned its power to terrorize the law-abiding citizens of great communities. With our recent experience before us, it is believed that no thoughtful man can argue in favor of delay by the proper authorities in dealing with lawless and riotous assemblages. Delay simply leads to destruction of property, and may lead in the end to the destruction of life. The force used to repress such assemblages should be as prompt in its manifestation as the evil with which it deals. The interests concerned are too grave to admit of delay. The raising of the black flag and the stoppage of all vessels on the great lakes and on the Mississippi and Ohio rivers would not produce one tithe of the damage to the whole country that has resulted from the recent stoppage of the great trunk lines. The burning of the vessels and their cargoes in these waters would raise a storm of wrath which no mob would dare to face, and would be visited by the United States Government under existing laws with most exemplary punishment. But what distinctions can be established between such a crime and the hideous destruction at Pittsburgh of over eighteen hundred cars laden with the products of the various States, together with the engines ready to move

them to their destination, and the station buildings and machine shops that were absolutely essential to their proper care and movement, and which, with other like doings, resulted in the stoppage of all commerce and business relations between the States, not only on one highway, but on many important lines, through the concerted action of the mob and its leaders? In the city of Pittsburgh much human life and many private dwellings and other property were sacrificed as the result of mob violence; indeed, it is almost a marvel that a large portion of that city was not destroyed by fire. Only the prevailing direction of the wind averted greater and more general disaster.

The authority of the United States, now potent to protect commerce moving upon the waters, should be equally potent when the same commerce is exposed to greater peril upon land. This brings us, then, to the practical question: In what shape can this protection be put so as to be extended most efficiently and with the least delay? The present regulations all favor, unintentionally, the rioters and the mob. In the first place, the mayor of a city must exhaust his power, the sheriff of the county must essay his strength; then, while previous time is expending—for a mob constantly attracts dangerous element and grows with impunity and success—the governor of the State must be called upon by the sheriff of a county. If the State happens to have an effective military organization, which at the present time is the case in perhaps not more than five out of the thirty-seven States of the Union, the governor can call out the military forces and suppress the riot. If the State has no such organization, or if the military forces of the State prove inadequate to the emergency, the governor is paralyzed and must call upon the United States for assistance. If the authorities of any State should, for any cause, fail or refuse to call upon the United States Government, what possible remedy or protection is left to life and property within the limits of that commonwealth? It can readily be seen what frightful possibilities of mischief are afforded by the necessarily long interval which must elapse in the present state of our laws before the Federal authority can intervene in cases where its intervention is most imperative. In fact, as our recent experience has shown, the only roads which could procure prompt protection and immunity from interference were those whose misfortunes had made them bankrupt and placed them in the direct custody of receivers appointed by the United States courts. To the aid of these roads the United States marshal could call United States troops, and no rioter dared to resist the power represented by the small but admirably-disciplined detachments quartered near the scenes of the recent troubles. It will hardly be contended that the railway companies must become bankrupt in order to make secure the uninterrupted movement of traffic over their lines, or to entitle them to the efficient protection of the United States government. If a bondholder or other creditor is entitled to the protection of the federal courts to prevent the threatened impairment of the value of a property through legal proceedings, he certainly should not be left without remedy against lawless violence, which has actually destroyed the security for his investment, and has, as at Pittsburgh, converted millions of dollars into scrap-iron and ashes. The laws which give the federal courts the summary process of injunction to restrain so comparatively trifling a wrong as an infringement of a patent right certainly must have been intended or ought to give the United States authority to prevent a wrongdoing which not only destroys a particular road, but also paralyzes the entire commerce of the country and wastes the national wealth.

It surely may be hoped that at the approaching session of Congress the earnest, unprejudiced and patriotic men of both houses will discuss this grave subject independently of party lines, and with the united resolve to secure equity to all interests and to take all necessary measures to secure protection to life and property and the impartial enforcement of the laws, including the guarantee to every man of the right to work for such compensation as he may agree upon with other men, free from interference or intimidation. The able lawyers of the Senate and House will perhaps frame a law which will give to the owners of every highway carrying interstate commerce, whether by land or water, in which citizens of different States are interested, or carrying the United States mails or other Government property, the right to appear by petition properly verified before the tribunals of the United States, in order to show that the movement of such traffic has been interfered with by unlawful combinations, by threats or by violence, and which upon such showing will give these tribunals the right, when necessary, to call upon the United States in the form now authorized by law to enforce their process by arresting the rioters and the suppression of all such unlawful combinations. The magnitude of the evil to be met and dealt with can hardly be overestimated. The remedy to be provided should be equally prompt and effective. It must be discussed and adopted in the interest of the whole country and not of any particular class, for the interests of all classes of our citizens are the same in the maintenance of domestic peace and civil order. But to no one class in the community is an absolute assurance of peace so important as to the men who have no capital, but their labor. When the accumulations of labor are put in peril by lawlessness, capital may always protect itself by suspending the enterprises which give labor its value and insure it its reward. Anarchy not only deprives the laboring man of his present subsistence, but puts in jeopardy all his hopes of improvement for his own future and the future of his family. My own railway experience, extending over a period of thirty years, leads me to believe that the managers of American railways in general may fearlessly appeal to their past relations with the faithful among their employees to prove that they at least have always endeavored to treat the interests of employees and employed as identical, and have never failed to take into prompt and respectful consideration every grievance which has been fairly and promptly presented to them. I am sure that it has been the purpose of the company with which I am connected to at all times pay its employees the best compensation that the business of the country would warrant, and I have no doubt that this will be the policy of the company for all future time, as it is founded on sound business principles no less than upon the instincts of humanity.

THOMAS A. SCOTT.

Contributions.

The Safety Valve and Whistle.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I wonder if it ever occurs to any one how much steam is wasted at the safety valve and the whistle of a locomotive. If it requires from 100 to 120 pounds pressure to the inch to enable an engine to perform its daily task, and the safety valve is set to blow off at 150 pounds, it would seem this ought to give the engineer and fireman ample latitude to enable them to so adjust the ash-pan dampers and door of the furnace that steam would rarely escape at the safety valve.

As to the whistle, a simple toot or two occasionally in cases of emergency to warn some one from the track, or as a signal for the brakes, would seem to be the only legitimate use of steam in the way of whistles.

And yet of the twenty or more trains which daily pass my

residence I notice that nearly half of them make a regular practice of blowing their whistles some twenty rods at a time, and some half-dozen times within as many miles; and their safety valves seem to be at work also much of the time. It would be interesting to know exactly what per cent. of the fuel is wasted in this way.

If their coal bunks upon their tenders were so made as to let a bushel of coal drop upon the track every ten miles of their progress, the waste would then become so manifest, no doubt, that it would be attended to at once.

If one train can be run without the use of the safety valve or whistle, another one can be so run, with the exercise of an equal care and vigilance on the part of the engineer and fireman.

This matter of waste at the safety valve and whistle seems to rest entirely with the men upon the foot-board of the engine; and as they prize their good standing as engineers and firemen, they should attend to it.

F. G. W.

Coal Dust as Fuel—The Anthracite Fuel Company's Works.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The Anthracite Fuel Company, of Rondout, N. Y., has established at the Hudson River terminus of the Delaware & Hudson Canal a great manufactory for the utilization of the dust or "culm" of anthracite coal, a material which accumulates in enormous quantities wherever there are coal breakers. This culm is nearly all pure coal, but in such form that it cannot be utilized by any ordinary means, for it will not burn in an ordinary furnace. We have heretofore given some account of experiments made on the Philadelphia & Reading Railroad for burning it in locomotive fire-boxes by a special apparatus for feeding the fire; but the Anthracite Fuel Company's process prepares it in form for general consumption in ordinary furnaces, by a process which will be described below, an opportunity having been given for its examination to party of invited guests last week, by the managers of the company.

The works are situated at Port Ewen, on the Hudson, one mile below the mouth of Rondout Creek, on a dock 600 feet long by 110 feet wide, entirely surrounded by water, thus affording a water frontage of nearly 1,500 feet, and giving unusual facilities for manufacture and shipping. A Corliss engine of 200 horse power moves the machinery. The process is simple and entirely automatic.

The anthracite coal dust or "culm" is brought by boats via Delaware & Hudson Canal from the breakers at Honesdale and the mines at Carbondale. The breakers at Rondout also supply a large quantity. The boats are brought to the river side of the dock, where the dust is raised by an elevator to the height of sixty feet and distributed by chutes to the culm receivers, which have a capacity of 260 tons each and are situated at either end of a building of heavy yellow pine 72 ft. long by 24 ft. wide.

Between the two is the "pitch" receiver, with a capacity of 140 tons. This pitch is the material used in fusion with the dust and is the result of the severe distillation of coal tar. In other words, it is the bitumen of soft coal. Commercially it is known as "fuel pitch" and is largely used in Europe, whither large quantities have been exported by Messrs. Page, Kidder & Fletcher, of the Palisade Chemical Works, of No. 10 Warren street, New York, who supply this company.

From the bottom of each receiver the culm passes through a chute and is fed automatically into a screw conveyor, which moves it forward to the point of its union with the pitch, the exact proportion of which is regulated by an ingenious feed arrangement so adjusted that no matter what speed of production is obtained the proportion (nine parts of culm to one of pitch) will be observed. It is also capable of speedy readjustment to meet any change in the condition or volume of the materials themselves.

The pitch is reduced to a state of fineness equal to that of pea coal and smaller, by means of a system of crushers with prison-shaped teeth, it being a peculiarity of this eccentric material that it will disintegrate under concussion even when too plastic to resist heavy pressure. After crushing it is promptly taken off by automatic "feeds," as if allowed to stand any length of time, it will solidify under either pressure or a higher temperature. The pitch and culm come together at the inner end of a dry mixer and are thoroughly mixed in that state before fusion. The material is then taken up by the machine elevator and dumped through the machine chute into the fusing cylinder, the bottom of which, in position, covers a segment of the molding table. In the centre of the machine room, between the two systems, stands an upright tubular boiler of 25-horse power. The boiler sends its steam into a dryer on top, where its temperature is increased to 375 or 400 degrees, and it is then passed through a Bulkley super-heater, where it is heated up to 575 or 600 degrees. It is then distributed by pipes, covered with mineral wool as an insulator, to the fusing cylinders of the two machines, where through heavy cast-iron nipples, controlled by valves specially constructed to resist the severe effects of very hot steam, it is applied to the materials, which results in the complete liquefaction of the pitch and in its thorough fusion with and absorption by the coal dust. At the bottom of the mixer the material is forced into the pockets of the mold table, a large horizontal wheel, moving at the speed of $2\frac{1}{2}$ revolutions per minute, and containing ten molds or pockets, $6\times 10\times 4\frac{1}{2}$ inches, at the bottom of each of which is a moving piston or "plunger." As the molds are filled the pistons pass over a movable incline, capped for a wearing surface with chrome steel of a very fine grain, selected with special reference to resisting frictional wear, and also affording great tensile strength. This incline rests on a lever which runs through to the centre of the machine, and is there held in suspension by a heavy rod, which is itself held at the top of the machine by four heavy rubber springs ten inches in diameter, thus securing what has long been sought, a system of adjustable pressure; for

no matter what the consistency of the material, these springs will yield to the point desired to allow the passage of the pistons. Great risk of breakage is thereby obviated. A pressure of 30,000 lbs. is thus safely secured. As the pistons pass over the incline, they press upward against the pressure plate, the wearing surface of which is lined with a fine grade of Black Diamond steel. This gives them their shape and solidity, and the operation of filling and pressing is continuous. As the molds emerge from under the pressure plate the pistons suddenly move up another incline which brings the blocks of coal flush with the surface of the molding table, from which they are speedily swept off by a movable bar on to a carrier composed of the endless positive transmission chain made by the Ewart Manufacturing Co., of Chicago. This carrier, 65 ft. long, delivers its load in regular order at the side of the dock, where it falls into the hands of men, four at each belt, who at once stow it, in regular tiers, on board the boats. The blocks of coal are brick-shaped, weigh about 14 lbs. each, and are hard enough to handle and stow when they emerge from the table.

The process is thus automatic and continuous, without the intervention of any labor in handling material, from the time the culm is taken out of the boats by the elevator on one side of the dock until the manufactured product is delivered into a boat on the other side.

A ton of this material will stow into 30 cubic feet of space; the ordinary storage capacity of coal being from 40 to 45 cubic feet.

The capacity of the works is 250 tons a day running double time, and it is expected that the production for 1877 will amount to 40,000 tons.

After the inspection of the works a special train took the visitors 41 miles out on the Ulster & Delaware Railroad into the heart of the Catskills. The locomotive burned the "anthracite fuel" manufactured at the works, and the run was made in 64 minutes, reaching a point 2,000 feet above the place of starting. Four miles of this road have a grade of 150 ft. to the mile.

The advantage of such a manufacture is that it utilizes what has been hitherto useless, though mined, brought to the surface and in many cases transported some distance, at as great expense as accompanies the production of the larger and saleable coal. During the years that the anthracite mines have been opened, enormous quantities of this material have accumulated, often being very much in the way. It is not probable that all these accumulations are now in condition to be used in this manufacture, but vast quantities of it can be; and if only the yearly accumulations are utilized, it will be a substantial addition to the available fuel production, without any increase in the work of mining.

American Locomotives as They Appear to Australian Eyes.

A correspondent kindly sends us the following article from the Melbourne Age of July 21:

On the recommendation of the Engineer-in-Chief, the Victorian Government recently sent to America for a pair of locomotives similar in construction to those in general use on the American railroads and combining all the latest improvements. An order was sent to the establishment of Rogers & Paterson, New York [sic], one of the most extensive works in the States for the manufacture of locomotives, and the machinery recently arrived. Both engines are to be fitted up at the Williamstown workshops, under the supervision of a mechanic sent out specially by the manufacturer. The erection of one of these was so far completed as to allow of steam being generated in the boiler for the first time yesterday, and an opportunity was afforded a number of persons of seeing the locomotive outside of the shed, although it was not quite ready to be set in motion. The appearance of the locomotive is totally different to the English make, being more showy. Most of the working parts are more exposed, and, as they are polished and painted off in various colors, they appear very attractive. The locomotive is purely of the American style, with outside cylinders and steam-chest on top. The valves are worked by a rocking shaft, with eccentrics from the driving axle. The diameter of the cylinders is 17 in. and the stroke 22 in. The driving-wheels are five feet high, four coupled. The fore part of the engine rests on a bogie truck, in which the principles of no less than six inventions are combined. The bogie wheels are made entirely of chilled cast iron, and the bogie truck is considered to be thoroughly perfect in mechanism, and as good an adaptation of the principle as could be desired. The driving-wheels are made of cast iron bound with steel tires 2½ in. thick, the spokes being made hollow, so that the engine might not be too heavy. The boiler is so constructed that either wood or coal may be burnt in it. The fire-box is made of steel and the tubes of wrought iron. In the English-made locomotives the fire-boxes are made of copper and the tubes of brass. The working parts of the engines, such as the pumps, the injectors, mountings and fittings, are of entirely different patterns to those in English locomotives. The total weight of the engine is about thirty tons. The driver's shed is a really handsome structure. It is made of beautifully polished walnut, and is ornately finished. This addition to the locomotive forms one of its most attractive features, the contrast with the miserable, dirty-looking covers on the locomotives now on our lines being very striking. It is said that the walnut is not introduced for the purpose of ornamentation, although there can be no doubt as to its being a great improvement, but simply because it is as cheap as pine, where the engines are constructed, and because it is less liable to the accumulation of dirt. The tender is of very light construction indeed, being mounted on a wooden frame. It is supported on double bogie wheels, smaller and lighter than those which bear the weight of the forepart of the engine. In addition to the steam-chest a sand-box made in the shape of a dome is fixed on the top of the boiler, and the sand is conducted to the wheels by small pipes. As most of the American railroads are not fenced in, one of the most necessary adjuncts to the forepart of the locomotive is a strong reflecting lamp, for night traveling, and one of the very latest make in use there has been forwarded with the engine. It is of immense size, being two feet wide, three and a half feet high, and two feet deep, and is placed on a projecting platform at the bottom of the smoke funnel. The glass in front is two feet in diameter, and the reflector is formed in the shape of a parabola. This reflector is composed of copper, with the face silver-plated. A circular kerosene burner is set in the extreme end of the parabola, and it is said that when it is lighted up a strong flood of light is shown a distance of a quarter of a mile away. What a glori-

ous transformation from the dusky lamps now fixed on our trains, which only serve, by the feebleness of their rays, to increase the surrounding gloom, shading objects which would otherwise be quite discernible. The only object for which these lamps can be useful is that of showing the unwary traveler or the vigilant gateman the approach of the hissing monster which defies all impediments to its onward progress. But with the lamps patented by J. A. Williams, of Utica, N. Y., quite a different effect will be produced, as, by the brilliancy and power of the light which it throws forth, any driver with a good night eye, as it is termed, will be able to see any obstruction on the line long before he comes to it. The lamp in question displays splendid workmanship, and is well worthy of inspection. Should it prove the great success which is anticipated of it, there is every likelihood of its being brought into general use here. On the corners of the front of the engine there is an apparatus for displaying signal flags, but as these are not used on our lines the fixings will be removed after they have been kept on for a short time, so as to show the people of the colony the latest notions emanating from the inventive mind of the Yankee. The total cost of the two engines was 18,800 dollars, but to this amount was added 1,638 dollars 27 cents under the head of charges, and £370 for freight. This would make the total cost of the two engines landed at the Williamstown shops about £4,625, and to this will have to be added the cost of erection, which will not be very considerable. The officers of the department are not prepared at present to offer any opinion as to whether these locomotives will be of any greater advantage than those made according to English patterns; but as the one just fitted up will have a fair trial in a week or so, they will be then able to form a conclusion. We understand that it is contemplated to run the locomotive with a passenger train for the first time to the opening of the Colac Railway.

RAILROAD LAW.

Putting Passengers Off the Cars.

The Supreme Court of Ohio, in a recent case in which the Cincinnati, Hamilton & Dayton Railroad Company was concerned, has ruled as follows upon the right to turn passengers out of cars for the non-payment of fare:

It appeared that the rates of fare fixed by the company, and which by its established rules it was made the duty of the conductor to demand, were higher than those allowed by law. The plaintiff tendered, what he claimed to be, and what was ultimately held to be, the legal rates, and, upon refusal to pay more, was ejected from the cars, but without any rudeness or unnecessary violence. It also appeared that the plaintiff, at the time he took passage, knew the established rates, and expected to be ejected from the cars, intending to bring an action for such ejection in order to test the right of the company to charge the established rates. It was held that the plaintiff was only entitled to compensatory damages, and that it was competent for the company, for the purpose of mitigating damages or preventing the recovery of exemplary damages, to give in evidence subsequent declarations of the plaintiff, tending to prove that his object in taking passage on the cars was to make money by bringing suit against the company for demanding or receiving their established rates of fare.

The Proposed Constitution of Georgia on Railroads.

The constitution prepared for the State of Georgia by the recent convention, which has still to be voted on by the people, contains the following articles relating to railroads:

Art. 1, Section 3, Par. 3. No grant of special privileges or immunities shall be revoked, except in such manner as to work no injustice to the corporations or creditors of the incorporation.

Art. 3, Section 7, Par. 18. The General Assembly shall have no power to grant corporate powers and privileges to private companies, except banking, insurance, railroad, canal, navigation, express and telegraph companies; nor to make or change election precincts; nor to establish bridges or ferries; nor to change names or legitimize children; but it shall prescribe by law the manner in which such powers shall be exercised by the courts.

Art. 3, Section 7, Par. 20. The General Assembly shall not authorize the construction of any street passenger railway within the limits of any incorporated town or city without the consent of the corporate authorities.

Art. 4, Section 2, Par. 1. The power and authority of regulating railroad freight and passenger tariffs, preventing unjust discriminations, and requiring reasonable and just rates of freight and passenger tariffs, are hereby conferred upon the General Assembly, whose duty it shall be to pass laws, from time to time, to regulate freight and passenger tariffs, to prohibit unjust discriminations on the various railroads of this State, and to prohibit said roads from charging other than just and reasonable rates, and enforce the same by adequate penalties.

Par. 2. The exercise of the right of eminent domain shall never be abridged, nor so construed as to prevent the General Assembly from taking the property and franchises of incorporated companies, and subjecting them to public use, the same as the property of individuals; and the exercise of the police power of the State shall never be abridged, nor so construed as to permit corporations to conduct their business in such manner as to infringe the equal rights of individuals, or the general well being of the State.

Par. 3. The General Assembly shall not remit the forfeiture of the charter of any corporation now existing, nor alter or amend the same, nor pass any other general or special law, for the benefit of said corporation, except upon the condition that such corporation shall thereafter hold its charter subject to the provisions of this constitution; and every amendment of any charter of any corporation in this State, or any special law for its benefit, accepted thereby, shall operate as a novation of said charter and shall bring the same under the provisions of this constitution; *Provided*, That this section shall not extend to any amendment for the purpose of allowing any existing road to take stock in or aid in the building of any branch road.

Par. 4. The General Assembly of this State shall have no power to authorize any corporation to buy shares, or stock, in any other corporation in this State, or elsewhere, or to make any contract or agreement whatever, with any such corporation, which may have the effect, or be intended to have the effect, to defeat or lessen competition, or to encourage monopoly; and all such contracts and agreements shall be illegal and void.

Par. 5. No railroad company shall give, or pay, any rebate, or bonus in the nature thereof, directly or indirectly, or do any act to mislead or deceive the public as to the real rates charged or received for freights or passage, and any such payments shall be illegal and void; and these prohibitions shall be enforced by suitable penalties.

Par. 6. No provision of this article shall be deemed, held or taken to impair the obligation of any contract heretofore made by the State of Georgia.

Par. 7. The General Assembly shall enforce the provisions of this article by appropriate legislation.

Art. 7, Section 5, Par. 1. The credit of the State shall not be pledged or loaned to any individual, company, corporation or association, and the State shall not become a joint owner or stockholder in any company, association or corporation.

Art. 7, Section 6, Par. 1. The General Assembly shall not authorize any county, municipal corporation or political division of this State to become a stockholder in any company, corporation or association, or to appropriate any money for or to loan its credit to any corporation, company, association, institution

or individual, except for purely charitable purposes. This restriction shall not operate to prevent the support of schools by municipal corporations within their respective limits: *Provided*, that if any municipal corporation shall offer to the State any property for locating or building a capitol, and the State accepts such offer, the corporation may comply with such offer.

Railroad Aid Bonds in Kansas.

In the case of the Leavenworth, Lawrence & Galveston Co. against Douglas County, the Kansas Supreme Court held:

"Whatever may be individual opinions, it is at present the settled policy of this State to tolerate the issue by municipalities of bonds in aid of railroads, and the settled law that bonds so issued, if issued in pursuance of express authority and in accordance with the prescribed forms, are valid.

"While the power to issue such bonds in aid of railroads is not one of the ordinary powers of a county, but requires express authority, which must be conferred to as to form, it is not penal in its nature, and the validity of the exercise of the power granted does not demand all the strictness of the ancient rules of the criminal law; so, while it is true that the authority to issue bonds in aid of a railroad, upon compliance with certain conditions specified, carries with it no authority to waive any of the conditions, yet, when there is a failure on the part of the railroad company to comply with one of the conditions in some minor respect, notwithstanding which the commissioners, acting in good faith, so issue the bonds of the county, and the failure is a matter which is of public knowledge, a failure by the county to make any objection, or take any proceedings, and payment for a series of years of the interest on the bonds, will work a ratification of the action of the commissioners, and prevent the county from thereafter recovering of the railroad company the bonds or their value."

THE SCRAP HEAP.

Railroad Manufactures.

The annual meeting of the Springfield Iron Co. was held in Springfield, Ill., Aug. 28, when Charles Ridgely was re-elected President; John W. Bunn, Vice-President; George M. Brinkerhoff, Secretary. The directors report stated that the make of rail for the year ending July 31, in tons of 2,240 lbs., was as follows: 1876-77, 26,365; 1875-76, 21,783; 1874-75, 24,240; 1873-74, 13,668; 1872-73, 10,561. The largest product in any one month last year was 3,350 tons. Since Jan. 1 all rails made have been reheated. Orders have been plenty during the whole of the present season, the company having generally had from 6,000 to 10,000 tons ordered ahead. Orders enough are now on hand to insure the working of the mill up to the advent of winter weather. During the past year the company has added the manufacture of fish-plates, bolts and nuts to its other products and is now ready to fill orders for this branch of manufacture. The finances of the company are in a satisfactory condition, it being about out of debt with the exception of an issue of \$100,000 first mortgage bonds. No dividend was declared, the directors having determined to apply all earnings to the payment of the bonded debt, which matures on Jan. 1 next.

The Ohio Falls Car Co., at Jeffersonville, Ind., are at work on an order for 15 passenger and baggage cars for the Minneapolis & St. Louis road. The works have an order for 500 car wheels for a Southern road.

The furnaces of the Barlow Iron Co. in Northwestern Georgia have gone out of blast.

The Brooks Locomotive Works, at Dunkirk, N. Y., have orders for one 42-in gauge passenger engine for the Covington, Columbus & Black Hills Railroad, and for five consolidation engines for the Erie.

The Vulcan Iron Works, at St. Louis, have been shipping steel rails to the Kansas Pacific road.

The Baldwin Locomotive Works, at Philadelphia, are building 10 engines for the Missouri, Kansas & Texas, four for the Atlanta & Charlotte Air Line and two for the Greenville & Columbia. The report that these works are to be removed from Philadelphia is revived, the place now named being on the line of the West Jersey Railroad, in Gloucester County, N. J., but the report must be considered doubtful.

The Keystone Bridge Co., of Pittsburgh, has just completed the great channel span, 520 feet long, of the Cincinnati Southern Railroad bridge over the Ohio River.

The Taunton (Mass.) Locomotive Works last week shipped a freight engine, 18 by 24 in. cylinders and 5 ft. drivers, to the Vermont Valley road.

The Cleveland (O.) Bridge & Car Works of Claffen & Sheldon lately shipped four horse cars to Manchester, N. H., and two small bridges for the Lake Shore road. They are building some horse cars for a Canadian town and a highway bridge in Cleveland.

Hewes & Phillips, at Newark, N. J., have their shops full of work for the first time in several years. They have orders for several large stationary engines, including two very heavy rolling-mill engines, besides a good deal of miscellaneous work.

The Leighton Bridge & Iron Works, at Rochester, N. Y., have recently completed a new highway bridge over the Connecticut River at Springfield, Mass. It is a riveted lattice bridge, 1,134 feet long in seven spans, with a roadway 30 feet wide and one sidewalk 6½ feet wide. The contract price for the superstructure was \$71,500; the mason work, built by Batty & Dresser under a separate contract, cost \$8,000.

The car shops of the New York & New England Railroad at Norwood, Mass., have just completed four new passenger cars.

Contracts.

The trustees of the New York & Brooklyn Bridge will receive at their office, No. 21 Water street, Brooklyn, N. Y., until Oct. 1, proposals for about 20,000 cubic yards of granite face, arch and other stone; also for about 3,000 lineal feet of granite parapet stone. Plans and specifications can be had at the office.

Bids will also be received at the same place until Oct. 1 for the manufacture and delivery of about 1,300 wrought-iron sockets for wire rope to be made to drawings. Tracings will be furnished on application.

Missouri, Kansas & Texas Car Report.

Master Car Builder J. C. Barber, of the Missouri, Kansas & Texas Railway, reports for June and July as follows:

	June		July	
	Passenger.	Loaded freight.	Passenger.	Loaded freight.
Cars per train.....	4.7	15.3	4.8	16.1
Total mileage of trains..	58,178	113,235	61,893	169,732
Cost of car repairs per train mile.....	9.41 cts.	8.78 cts.	10.33 cts.	7.47 cts.
Total mileage of cars....	265,381	1,758,224	279,439	1,794,090
Cost of repairs per car mile.....	2.06 cts.	0.57 ct.	2.29 cts.	0.46 ct.
Total cost of repairs....	\$5,473.23	\$9,940.80	\$6,396.45	\$8,202.69
Mileage of Pullman cars.	55,318	.....	62,806	.....
Cost of Pullman car repairs per mile.....	1.73 cts.	.....	1.76 cts.	.....

The total cost of Car Department, including all expenses, was, for June, \$15,414.03; July, \$14,599.14. In computing freight mileage three empty cars are rated as two loaded ones.

Steam Street Cars.

The Danforth Locomotive Works in Paterson, N. J., are building a steam car which is to be used on the Paterson & Passaic street railroad. This is in part a suburban line, running from Paterson to Cedar Lawn Cemetery and Lake View.

A dummy or separate motor engine is being tried on the Cass Avenue & Seventh Street line in St. Louis.



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Editorial Announcements.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE RAILROADS AND THE GENERAL GOVERNMENT.

Mr. Thos. A. Scott's letter on the "Recent Strikes," published in the *North American Review* and copied in these pages this week, cannot be said to discuss the labor question. After a brief statement of the insurrection accompanying the strikes, and of the great shrinkage in the earnings of the capital which employs labor, the body of the article is devoted to the discussion of the best method, not of avoiding strikes, but of suppressing insurrections on railroads. Really in this recent case the suppression of insurrection was the first and chief object to be aimed at. Whether the strike were right or wrong, the insurrection was certainly wrong and insufferable; no discussion could be tolerated until it was put down; and it remains of the highest importance to the whole community, and not least to those who work for wages, that any future attempts of the kind be suppressed more promptly than the late one, and in such a way as to forever discourage further attempts to regulate wages by criminal means.

It is perhaps natural that railroad proprietors should lay too much stress on the duty of protecting them in the free use of their property, and on that account advocate the maintenance of an unnecessarily large force to keep the peace, whether civil or military. But though they may exaggerate the interest which they have at stake, after all the public interest in keeping the railroads open is still greater. Absolutely, the community, as it is now organized, cannot exist without the railroads, and the interruption of their traffic for a considerable period—especially if the interruption were simultaneous on all the railroads—would cause infinitely greater damage to the community than that uses the railroads than to the people who own them. There is a special reason, therefore, for defending transportation business from interruption by disorder (as from all other interruptions, including legitimate strikes) which does not apply to most other kinds of business. The blockade of all the lines leading to a city would be like cutting off its water supply. It could not be endured, and, it is safe to say, will not be endured for any reason whatever, if men and arms can prevent it.

What is remarkable in Mr. Scott's paper is his proposal

that the railroads be defended by the general government without the mediation of local or State authorities. In this country the railroad corporations are created by the State governments, they are subject to the laws of the State in which they lie, they pay taxes to it, and, for the most part, are protected by its police force and in its courts. They are liable to the State for the proper exercise of their franchises, and are subject to its regulations and restrictions, if to any. In many cases they report to its officers, after forms prescribed by State laws. The general government, indeed, has scarcely anything to do with them.

As most of the more important railroads extend into more than one State, this dependence upon State authority is often inconvenient, to companies and community alike. A single machine is in some respects treated as if it were two or three or more machines, by arbitrary divisions. A single line may be subject to two or three different sets of police regulations. At the beginning of a run the law may require the whistle to be blown at every road crossing; at the end it may be a punishable offence to use the whistle except as a warning. A company may have to make an elaborate report according to a prescribed form for a year ending with June to one State in which it has part of its road, to another State by a different form for a year ending with September. And the community, which uses roads in all the States, cannot be sure that the rights and obligations which have been established in one State will be the same in another. Indeed, the chief demand for the subjection of railroads to national instead of State laws and regulations has heretofore come from the users of railroads, and not from their owners. The latter have been so accustomed of late to find new legislation synonymous with hostile legislation that they are likely to look upon any change with suspicion.

While Mr. Scott does not propose anything like a general transfer of the railroads from the State to the national authority, it seems quite probable that what he does propose would be attended by such a transfer. Neither change could be made, we suppose, simply by act of Congress—a change in the Constitution would probably be required, though there are differences of opinion as to that. This makes such a step much more difficult, and almost certain not to be made soon. The discussion at this stage, however, is not so much as to its immediate practicability as to its desirability if practicable; and, so far as the railroads are concerned, this discussion would better not concern itself with the general effect on our form of government, and the relation of the States to the nation. It will be argued, doubtless, that such a step would be a radical innovation in our method of government, and the beginning of what might be a revolution; and a very large number of statesmen and publicists, including some of the ablest, will oppose it on that account—as a first step towards centralization. They will take good care of this phase of the subject, and it need not prevent the consideration of the question as to how far and in what respects the interests of the owners and patrons of the railroads would be affected if the railroad corporations were subject to national instead of State laws and regulations.

The advantage of uniformity of regulations for what is substantially one instrument of transportation used indiscriminately by the whole country is obvious and indisputable. So important has it seemed in Europe that there is at this time a movement, strongly supported, to secure the adoption of an international law concerning freight traffic moving over routes in more than one country—intended to secure uniform rules for minimum time of carriage, damages for delays, losses, etc. The necessity there is doubtless greater than it is here, because railroads on the Continent are subject to a close government supervision, and so have to do their work and make their contracts after methods prescribed to them, while here the carriers have very much greater freedom. If it were a question of substituting for the comparative freedom of subjection to State laws a minute regulation under the general government similar to that of France or Germany, probably very few Americans, whatever their opinions as to railroad abuses, would be in favor of the change. The most that is likely to be proposed is to give Congress something like the authority which the British Parliament exercises over all the railroads of Great Britain—which is much less, by the way, than many of our State legislatures have attempted.

If a policy of minute regulation is followed, doubtless it would be better to have it exercised by the States. The tendency of a national regulation is to a uniformity which takes little or no account of the objects to be attained. The success of this country in devising railroads and methods of operation which can be supported by a light traffic—in which we excel the world—is due chiefly, doubtless, to the freedom permitted to our railroad men. This is more valuable in the early days of a new invention than afterward, but it is, in some degree, always requisite to the proper individualization of railroads—to designing them and working them in accordance with the special circumstances of each. There are certain leading features in which uniformity is desira-

ble, though even these do not become evident, or fully evident, until after long experience; but the advantage of such uniformity is usually so much greater to the railroad companies than to any one else that there is a natural tendency toward it without government interference. If uniformity is prescribed by law, or by government officers, it is likely to extend to many things which were better different. Indeed, the whole tendency of minute government regulation is to make all things alike, require heavy roads for a light traffic, complex appliances for a simple business, and prevent that close adjustment of the means to the end which is sought for and often attained by those who work freely with their own capital to provide facilities for a given traffic. This is an objection to State as well as to national regulation, but the greater the territory and the number and character of its railroads, the greater the objection.

As we have said, President Scott's *North American Review* article does not even hint at any other change in the relations of the railroad companies to the nation than to give the latter authority to act directly and of its own motion to prevent the unlawful blockading of railroads. But as this would give the general government the initiative in enforcing the State laws, we think it doubtful whether the general government will undertake such a defense of the property of the railroad companies unless it at the same time assumes greater authority over them. At least the question of national regulation has been brought before the public recently so prominently as to make it proper that it should be considered by railroad men. When the Secretary of the Treasury can say, as Secretary Sherman did at the opening of the Ohio campaign on the 17th of last month, that his hope is "that Congress will pass laws to establish and limit maximum rates of freight, so that the production of a farmer may not be in danger of confiscation by exorbitant rates, that it will limit and restrain the cutting and reduction of freights so as to destroy the ability of railroad companies to pay fair prices for honest labor, and prevent the companies from making paupers of men who perform essential functions in commerce"—when the Secretary of the Treasury can say this, it is evident that there may be at least an attempt to exercise such a supervision over the railroads as the general government has never before attempted. And it is the more significant because Secretary Sherman, as one of the oldest of our national legislators, ought to know the constitutional limits of national legislation; while as a director of the Pittsburgh, Fort Wayne & Chicago Railway Company of many years standing, he ought also to know how railroads would be affected by such a change. To have one director of a railroad company calling for the regulation of the railroads by United States laws while another director of the same company calls for their protection by United States troops, is a somewhat remarkable though doubtless an accidental coincidence.

The History of American Railroads.

Any one who has been much interested in railroads will realize, if he stops to reflect for a few moments, that their history in this country has never been adequately written, and, what is still worse, much of the material out of which such a history could be made is rapidly passing out of existence. The obituary columns of our papers warn us, too, that one after another of the older men who were identified with the first introduction of railroads in this country are passing away, and unless the task of collecting the material for such a history is commenced soon, the writer of it will be obliged to depend upon imperfect records alone for his information. Of the latter there is also an immense amount which is yearly destroyed. The object in writing on this subject is to call attention to the importance of preserving all such documents. There is a vandal idea prevailing among ordinary people that pamphlets and unbound "papers" have no value, but once put a stiff cover on the most utter trash, and then it at once becomes worthy of careful preservation. It is painful to think of the old drawings, maps and records of surveys which are sent to the paper mills annually, and which if preserved would be worth more than their weight in gold. This destruction is due generally to ignorance and also to the ardor of young draftsmen, who have not yet acquired any veneration or love for antiquity, which is a trait that only comes to mature years. Young men are very apt to think that there is something commendable in clearing away "old rubbish," and in their ardor they sometimes do much harm.

It would of course be a good thing if all railroad companies would employ a thoroughly competent person to write complete histories of their lines; but as it would be over-sanguine to expect that it will be done, it may be suggested that persons who have in their possession material, such as reports, pamphlets, drawings, maps, models, etc., should put them in some place where they will be preserved. If no better disposition can be made of them the *Railroad Gazette* will always be glad to receive them,

and will either assume the care of them or place them where they will be preserved from destruction.

It may be supposed that a history of railroads would be dry and uninteresting, and so it would be if it became simply a record of the organization of the companies, with records of dates and figures. But even these, if treated intelligently, would be of great interest and profit. An historical account of the first conception of the project, the organization of the company, the reasons for proposing the building of the line, the reports of the surveys, the methods employed for raising money, the rates received at various times for carrying freight and passengers, the amount of traffic carried each year, and the expenses of operating, if treated intelligently would form a book of very great interest and value. Besides these topics, a description of the early engineering of the different lines, the manner of and reasons for locating them where they were built, a description and illustration of the permanent way, rails and rail fastenings and especially of the bridges, the early cars and locomotives employed, the brakes, signals, etc., used and the experiments tried at various times, the tools used, the construction of shops and extensions of the line, the number of men employed and the officers engaged on the road, with a brief history of their characters and training, the notable accidents on the road—all this information, and doubtless much more which does not occur to us, if compiled in a skillful and systematic way, and presented in such a manner that the points of interest and profit would be brought out clearly, would make a book of very great interest at present and would be an authority for all future time. There are some dark and devious ways in which railroad business is often transacted which, if the historian could trace them, would make the interest in his volume almost tragic. Such information has of course been buried out of sight very carefully, although here and there the remains of an old stock-jobbing tumult might, if excavated, reveal the skeletons of criminal deeds whose lesson now would be profitable to study.

Of course with 75,000 miles and more of railroads, there would not be much chance to go into details concerning all of them, but by treating the subject by decades, that is, giving the history year by year of all built during that period, with a sort of review of the art, the subject would be presented to the reader and student with greater clearness than by describing each line separately.

We are quite well aware that such a plan implies an immense amount of labor, but the work is important enough to be done.

Self-Couplers.

There are, we are told, over a thousand patents on self-couplers for cars. Of these only one, Miller's, has ever come into any extensive use. Considering the apparent simplicity of the problem, it seems remarkable that, after so much inventive effort has been expended on it, it should not have met with better success. In Germany they seem to have abandoned the expectation of getting an effective self-coupler, and a few years ago offered a premium for an effective device by which cars could be coupled without obliging the attendant to go between them. Doubtless if inventors had given more attention to accomplishing this end, their efforts might have been attended with greater success, and, after all, what is chiefly needed is to protect the men who go between the cars from injury, which it would seem could be most effectually done by not obliging them to go between them at all.

Any one, however, who will examine the problem intelligently will find that an arrangement which will be effective in coupling cars is not so simple a matter as is supposed. It is true that the mechanical device of a link fastened to the two draw-heads by a pin in each is a very simple mechanical contrivance, but when it is operated by the intelligence of a brakeman, the two combined are very complicated. To illustrate this by another example, what could be more simple apparently than to pick up ordinary wood screws out of a dish, and insert them into a hole for the purpose of having the slots cut in their heads. Yet, simple as this act is, one of the greatest triumphs of human ingenuity was the construction of a machine which would do this automatically. Now in coupling cars the link must first be attached by a pin to the draw-head, then made to enter the opposite draw-head at the instant the two come in contact, and the coupling-pin must then be inserted instantly thereafter. Now observe in what exceedingly small fractions of time the whole operation must be performed, and that the one must succeed the other at precisely the proper moment.

Another difficulty of quite another kind comes in here, and that is the enormous strains to which the mechanism is subjected. How much the complexity of the problem is increased may be illustrated by the influence which proportion has upon other simple problems. Thus, what can be more simple than to bridge a narrow stream by throwing

a plank or timber across it, and yet multiply the width of the stream a hundred or a thousand fold, and the problem will require the highest engineering skill to work out, or, may be, will be rendered impossible. Now, in the coupling of cars there are no questions of great static forces to be considered, but the problem of constructing an automatic mechanism that will perform operations which are extremely complicated if analyzed, and that will resist without injury the tremendous concussions to which it is exposed when the cars come in contact, is one whose difficulty is analogous to that which is encountered in the construction of a bridge of a great span. In proportion to the magnitude or intensity of the strains to which a mechanism is subjected, the greater will be the difficulty of making it resist them, especially if the mechanism must be at all complicated.

It is of course true that the coupling of cars need not always be effected by the use of a link and pins, but it must be remembered that in attaching cars together they must be entirely free, within certain limits, to move up or down or laterally, otherwise the attachments or the cars themselves will be broken. As there are very few mechanical devices which will furnish a secure attachment in one direction, and will yet allow this freedom of movement in others, it will be seen that if the simplest one of them is abandoned a new set of difficulties is encountered.

Now besides all these, it must also be taken into consideration that the cars to which self-coupling arrangements must be attached vary very much in their construction. The height of their draw-bars is not uniform, and their form differs more than their height. In the case of the machine for picking up screws, the latter were all exactly alike, whereas if they had been of different sizes and shapes the difficulty of handling them by an automatic machine would have been immensely increased.

It will be seen, then, that the problem of making a self-coupler, instead of being a very simple one, is in reality very complicated. In addition to this, the fact that the thousand or more inventors who have been engaged in attempts at producing a really practicable self-coupler are, the great majority of them, inexperienced mechanics, have no knowledge of drawing, which is the language of invention, and probably never coupled a car in their lives—when all these considerations are taken in mind, it will be apparent that there is no cause for surprise that nearly, if not quite, all of their work has been ineffective.

If there were a rule in the patent office that no application for a patent for a self-coupler would be received unless the inventor would first give proper evidence that he had been engaged for three months in coupling cars, there would then certainly be fewer applications received, and there is no doubt that those sent in would describe inventions of more merit than are possessed by those which are received now. As coupling cars is a dangerous occupation, there would, with such a regulation, probably be fewer inventors of car-couplers left alive—a result which we are inclined to believe many railroad officers and some editors of railroad newspapers would not regret.

Speaking seriously, however, if inventors would direct their attention more to devices by which cars could be coupled without its being necessary for a person to go between them, they would probably accomplish more than they have thus far. If, too, car-builders would take steps to construct their cars so that a person in between them would be secure from accident and injury, they would do more to preserve lives and limbs than they will by dreaming over self-coupling expedients, although, doubtless, such arrangements, if practicable, are very much to be desired.

The Late Henry Tyson.

The announcement from Baltimore of the death of Henry Tyson, of that city, will cause great sorrow to his many friends, as he possessed in a wonderful degree that intelligent kindness of heart and integrity of purpose which attracted to him people whom he met, and who learned to feel that friendship to him was true allegiance to whatever was honorable and unselfish.

Mr. Tyson was born in Baltimore in 1820, and was consequently 57 years of age at the time of his death, which occurred on Saturday last after an illness of only a week. His ancestors had for several generations been identified with the business and prosperity of Baltimore. He was first engaged in the milling business in that city. During all his life he took a keen interest in engineering, and in 1856 was appointed Master of Machinery of the Baltimore & Ohio Railroad. He occupied that position for about five years, and then, owing to some disagreement with the President of that company, his connection with the road was severed. During his administration the board of directors instructed him to prepare plans and specifications for freight engines for their road. Those used theretofore for the freight traffic had been chiefly eight-wheeled connected engines built by Winans and known as "Camel" engines. Mr. Tyson took the ground that these engines were very injurious to the track, and were very badly constructed, and reported in favor of ten-wheeled engines, that is, engines with six connected driving-wheels and a four-wheeled leading truck. Winans, instead of conforming to the ideas of Mr. Tyson and building ten-wheeled engines, undertook to show that h

(Tyson) was wrong and attacked him in the most violent way in the daily papers. He went so far as to intimate, on very insufficient testimony, that there had been some corruption in the letting of contracts to other builders for the ten-wheeled engines. Public interest became very much excited, and the board of directors finally called upon Mr. Tyson for further information. He therefore addressed a note of inquiry to the subordinate officers in his department on the line of the road, asking for their opinion of the relative merits of the Camel and ten-wheeled engines. The replies unanimously condemned the Camel engine. These were then published in a pamphlet, and distributed through the length and breadth of the land and had the effect of entirely breaking up Mr. Winans' business, so that he ultimately sold off all his machinery and pulled down his shops.

The final solution, which time has worked, of the question which was then so warmly discussed, is that locomotives with eight wheels connected and without trucks are now not used in this country, but instead the consolidation pattern is employed, with eight wheels connected but with a truck having a single pair of wheels in front.

The system of sewerage adopted in 1860 for the city of Baltimore was devised by Mr. Tyson, but is still uncompleted. In 1861 he was elected President of the Baltimore City Passenger Railroad, which position he held for thirteen years. The plan for the improvement of Jones Falls (which, many of our readers may not know, is a stream of water which flows through the centre of Baltimore in a very contracted channel, and is therefore subject to frequent overflow) which was adopted by the Mayor and City Council of Baltimore, was also the work of Mr. Tyson. He was appointed one of three Commissioners to carry it out, but owing to a disagreement among them this was never done, and the plan was finally abandoned on account of its supposed excessive cost. In having his plan adopted and carried out, he was again attacked by his old opponent, Mr. Winans, who attempted in every way to show that the plan was inadequate or defective. Mr. Winans spent much time and money to demonstrate the soundness of his own views and the unsoundness of Mr. Tyson's plans. The latter once told the writer that after this dispute had continued for a long time, Mr. Winans finally called on him and stated that they had differed in a great many matters during a number of years before, but that he had called to say that after mature study and investigation of the Jones Falls question, he had found that Mr. Tyson was right and he (Mr. Winans) had been wrong in his opinion on that question.

Mr. Tyson's plan for the introduction of the temporary water supply in Baltimore was the one finally adopted in 1872 by the City Council, at a saving of \$200,000 over the plan previously agreed upon.

In 1873 he was elected Fourth Vice-President of the Erie Railway Company, with the duties of Superintendent of Machinery. He held this position only for a short time and then returned to Baltimore, where he was engaged in various matters pertaining to engineering. In 1875 he was appointed Receiver of the Chesapeake & Ohio Railroad, but retired from that office in a few months. Soon after he was appointed Shipping Commissioner of the Port of Baltimore, and held that position at the time of his death.

He was a member of the American Society of Civil Engineers, although he never took an active part in its proceedings.

In social relations he was very popular, and owing to the versatility of his knowledge and wonderfully retentive memory, and, more than all, to his warm-hearted impulses, was much esteemed as a companion and friend. He had a wonderful power of exciting enthusiastic friendship and admiration among the subordinates in his employ. His conduct was uniformly courteous and respectful to all, from the highest to the lowest, and his salutation on entering his office in the morning to the half-witted man who swept it out was as respectful as it would have been to the President of the company. His death will not be mourned more sincerely by any, excepting his own family, than by those who knew him years ago as an employer, during his connection with the Baltimore & Ohio Railroad. Many of those, too, will remember him, as the writer will, in connection with some kind act, of which he was the recipient at a critical period of life. Mr. Tyson was one of the few men who, all through an active life, in which there was much experience calculated to embitter him, retained through all of it a love of doing good to others, especially if they were weak or helpless. He was independent almost to a fault, and incapable of anything like adulation for the purpose of securing the aid or good will of those whose influence or wealth would have aided him. It may be said of him that he was a sincere friend and honest man and a true gentleman.

Through Pacific Railroad Traffic.

The through Pacific traffic is of a peculiar character. On most railroads in this country the chief traffic consists of freight of comparatively little value compared to its weight. On the Pacific railroads, however, the chief items are comparatively valuable materials. The report of the Central Pacific for 1876, just issued, gives an interesting statement of all the leading articles carried through in either direction for both 1875 and 1876. The total amount in both directions was 188,774 tons in 1876 and 173,794 in 1875, the increase last year being 8½ per cent. This amount was equivalent to 26 full car-loads each way daily in 1876. The totals for both directions are not given, but we believe the west-bound is in excess of the east-bound. Of the latter in 1876 the largest item was wool (24,305 tons) making 12½ per cent. of the total through traffic (in both directions). Then follows tea (9,643 tons and 5½ per cent.), barley (7,566 tons and 4 per cent.), salmon (4,499 tons and 2½ per cent.), wines and brandy (2,878 tons), hides and pelts (2,306 tons), and green fruit (2,101 tons), these together making 28 per cent. of the total through traffic, and probably considerably more than one-

half of the total east-bound through traffic. Tea, it seems, afforded about 2½ car-loads of freight daily, and this seems to be the only traffic of any importance that comes to the railroad from beyond the Pacific. All of the articles named, with the exception of barley, are comparatively valuable in proportion to weight. The barley, amounting to about 757 car loads, is carried to breweries in the Western States, we believe, where it is able to compete with domestic barley by reason of its fine color and quality; though, curiously enough, Eastern brewers, who could get California barley by sea much more cheaply, do not seem to import it.

The progress of the tea and wool traffic and of the total through traffic may be traced by the following figures, showing the number of tons of each shipped through for five years:

	Wool.	Tea.	Total through.
1872.....	10,735	6,063	98,607
1873.....	14,505	6,363	110,188
1874.....	16,020	5,899	152,443
1875.....	20,514	9,186	173,794
1876.....	24,305	9,643	186,774

This ought to be satisfactory progress for hard, or other, times: the increase since 1872 is 91½ per cent. in the total through traffic, rising from 13½ full car-loads each way daily in the first year to 26 in the last. Considering the fact that California does not grow very rapidly, and the further fact that but a very small proportion of the traffic comes from beyond the sea, this seems notable progress—a true development of traffic.

The chief items of west-bound traffic reported in 1876 are iron (9,526 tons), dry goods and domestics (8,351 tons), sugar (5,918 tons), paper (4,105 tons), tobacco (3,863 tons), wagons (3,834 tons), and agricultural implements (3,755 tons). These together formed 20½ per cent. of the total through traffic. Adding together all the other articles used for food going in this direction, we find them to amount to 13,246 tons, or about 7 per cent. of the total. It is noticeable that while there was an increase in nearly all the leading items of east-bound traffic, there was a decrease in many of the large west-bound items—as 29 per cent. in iron, 6½ per cent. in dry goods, 17 per cent. in machinery. For 1876, about four-fifths of the total freight carried through is enumerated in the table of articles shipped in the two directions. That is, while the total through traffic was about 189,000 tons, the articles enumerated include 90,000 tons shipped west and 60,000 shipped east.

Although this company has a large mileage of road over which the through freight does not move at all, including most of the railroads over which the great California wheat crop passes, the through traffic is yet much the largest, not in the number of tons handled, it is true, but in the tonnage mileage, which for the through traffic was 254,697,272 and for the local 147,637,105.

The small crop of California wheat will have an unfavorable effect on the local traffic of this road for the last half of the current year and the first half of 1878, but probably not so great an effect as most people imagine. During the year 1876, we are told, when the largest crop ever grown in California had to be moved, the company carrying 5,500,000 bushels in that time, the earnings from grain were but \$565,114, and but \$218,000 more than during 1875, when the crop was light.

Record of New Railroad Construction.

This number of the *Railroad Gazette* has information of the laying of track on new railroads as follows:

Billerica & Bedford.—Completed from Bedford, Mass., northward to North Billerica, 8 miles. It is of 2 ft. gauge.

Freehold & New York.—Track is laid from Freehold, N. J., north to Matawan, 13 miles.

Lewisburg, Centre & Spruce Creek.—Extended from Laurelton, Pa., westward to Spring Mills, 25 miles.

Pittsburgh, Virginia & Charleston.—Extended from Monongahela City, Pa., southward to Brownsville, 23 miles.

Burlington, Cedar Rapids & Northern.—Extended from Plymouth, Ia., northwest to Shell Rock, 6 miles.

Colorado Central.—On the extension of the standard-gauge line track is laid from Hazard, Wy. Ter., southward, 14 miles.

Denver & Rio Grande.—The *La Veta Branch* is extended from Greyback Gulch, Col., west by south to Garland City, 6 miles. It is of 3 ft. gauge.

This is a total of 95 miles of new railroad, making 1,108 miles completed in the United States in 1877, against 1,388 reported for the corresponding period in 1876, 678 in 1875, 984 in 1874, 2,408 in 1873, and 4,264 in 1872.

"FAIR WAGES" is the title of a short article in the *North American Review*, over the signature of "A Striker," intended doubtless as the complement of President Scott's letter on the "Recent Strikes." There is, however, hardly any relation between the two, except that neither has much to do with the labor question proper—the means to be used to secure the peaceable settlement, without interruption to work, of disputes between employers and employees as to the wages to be paid, hours of labor, etc. A "Striker," however, does say that an employer has no right to accept the labor of men who offer to work for the lowest wages, and that the labor market is controlled by great capitalists who systematically "bear" the prices. No attempt is made to show that wages were unduly low when the strike occurred, or to prove any single statement made. That great capitalists control the labor market can be proved to be untrue, we believe, by the fact that the wages paid by great corporations have been slower, in almost all instances, to come down than wages paid by individuals and small firms. The railroads, at least, have followed the market and have not made it. And in many cases that we know of they did not make their reductions recklessly and without regard to the rates paid by the others, but only after a careful examination of the rates already established by individuals. The New York Central & Hudson River Company, for instance, collected

an immense mass of information as to the wages paid in nearly all the important places on the line of its road, and changed its own rates in accordance—thus doing late what other employers had already done. The Erie also made a great collection of current rates of wages before it made any reduction. There is not an atom of evidence to indicate that there is any greater tendency among corporations to reduce wages than among individuals and small capitalists, which latter, indeed, usually make the market.

CANAL TRAFFIC is now about as heavy as it ever was, and this is credited by most New York newspapers to the reduction in tolls (amounting to one cent a bushel), in spite of the fact that the canal rates are considerably higher now than they were last year, and of the other fact that rail rates from Chicago are six or eight cents a bushel higher than last year. The fact is, it is doubtful whether the reduction in tolls has had any effect in increasing the canal traffic, though it may have encouraged some coal shipments westward. It has, however, had a considerable effect on the profits of the boatmen, who for some six weeks past, while the demand on them was active, have doubtless been able to charge just as much as if the tolls were higher. But to suppose that it is a reduction of one cent per bushel in the boatmen's expenses rather than the increase of six to eight cents a bushel in the railroad charges that has determined the return of the grain from the rail to the water route is quite irrational—is entirely so for the past month and a half, when we know that there was no reduction in canal rates in consequence of the reduction in tolls.

The west-bound business on the canals from New York, of which so much is said, is due chiefly to a new business in anthracite coal, which now forms more than three-quarters of the total shipments to the West. During the fourth week of August the whole amount of other freights was less than 5,400 tons, a large proportion of which was of the coarsest character, not likely to move at all by rail except at extremely low rates.

NATIVES OF INDIA are now very largely employed on the Indian railroads, and many in positions of some importance, which formerly were filled by Europeans exclusively. The companies have a strong inducement to favor the introduction of natives in the fact that European labor is exceptionally dear in India and native labor extremely cheap: we hear of signalmen paid a salary of about \$3.50 per month! But of course this "Indian cheap labor" is very disgusting to the European railroad men, who find the demand for their services decreasing, and their places taken by men who are content with a fraction of their wages. They insist that the natives are unfit for many of the positions in which they are placed. The custom of employing them as engine-men having increased recently, the white engine-men charge that the natives cannot keep awake! They have had them on the engines as firemen, and find that they will go to sleep—will sometimes sleep standing and shovel coal automatically, as it were. Certainly, if the natives have this disqualification, it cannot remain concealed. One would suppose that but one trip would be required to demonstrate in the most positive manner the impolicy of sending out a train with the engine-man and fireman asleep.

THE AUGUST GRAIN MOVEMENT appears to have been the largest on record with one exception—in 1873—when the harvest was not only abundant but early, the foreign demand active, prices high, and the pressure for money in this country beginning to be severe, culminating in the collapse in the fourth week of September. The receipts at Chicago last August were 39 per cent. greater than for the corresponding month last year, and at Milwaukee they were 124 per cent. greater, the total for the two places being about 14,100,000 bushels this year against 9,800,000 last. In the secondary effects on traffic, the increase is likely to be even greater; for the traffic in merchandise, etc., due to the prosperity of the farmers is measured chiefly by the value of the products marketed. Now the greater part of the increase this year has been in wheat, the grain which brings the highest price per bushel.

THE GENERAL TICKET AND PASSENGER AGENTS' ASSOCIATION will hold its regular annual meeting at the Hotel Brunswick, Boston, beginning at 11 a. m. Friday, Sept. 14. The Association has been for some years an official body, only those being members who are authorized by their managers to act for and bind their companies in making rates and divisions. Most of the important roads are represented, but a few are not, including some important New England lines. It was announced last spring that this fall meeting would be held in Montreal, but a change seems to have been thought advisable. Recently one of the features of the half-yearly meetings has been an address by one of the members. This fall Mr. James Charlton, of the Chicago & Alton, a gentleman noted for literary tastes and acquirements, delivers the address.

A HEAVY EXCURSION BUSINESS was developed last Sunday by the competition between the Camden & Atlantic and the new Philadelphia & Atlantic City roads. Both roads advertised excursions on that day from Philadelphia to Atlantic City and return at 50 cents for the round trip. The Camden & Atlantic carried over 7,500 passengers, running its train in six sections, 104 cars in all. Every passenger car on the road was in use, besides a number borrowed from others. The Philadelphia & Atlantic City took about 3,500, and, being unable to borrow cars on account of its exceptional gauge, had to turn away several hundred who could not find standing room. Fifty cents for a ride of 120 miles by rail was certainly an inducement not often offered.

THE ADVANCE IN GRAIN RATES made last Monday, from 30 to 35 cents per bushel from Chicago to New York and from 40 to 46 cents from St. Louis to New York, would seem to be all the traffic can bear while lake and canal rates remain as they are. The latter have greatly advanced, it is true, but their rates remain so low

that the railroads are by no means burdened with grain, and the water rates just now are weakening rather than stiffening. The advance extends to grain only. The business of the trunk lines is, however, quite satisfactory just now, and there has been talk of an advance on all fourth-class freight eastward.

WATER RATES are a little lower—a very little—all around. Corn was taken most of the week from Chicago to Buffalo at 2½ and 2½ cents, and from Buffalo to New York pretty steadily at 7 cents until Tuesday last, when 6½ was the quotation. From New York to Liverpool the rate by steam seems to have yielded about a penny a bushel, but by sail to Cork for orders rates seem to be fully maintained, Tuesday's quotations being 7s. 3d. to 7s. 6d. per quarter.

THE MASTER CAR-PAINTERS are to hold their annual meeting at the Eldridge House, in Albany, Wednesday, Sept. 19. All master car-painters are requested to attend. Several subjects of interest to them are to be reported on by committees appointed for that purpose a year ago.

NEW PUBLICATIONS.

Theory of Transverse Strains and its Application in the Construction of Buildings: By R. G. Hatfield. New York, John Wiley & Sons, 1877. Pp. 630. This work is a valuable contribution to technical literature, and architects especially are under many obligations to the author. In addition to much original research, the volume contains an excellent summary of the principles relating to the strength and elasticity of beams, presented in a manner which is exceedingly commendable in many respects. A *resume* of the principal contents, with some criticisms that seem pertinent, is appended.

The first 210 pages of the work are devoted to a discussion of the resistance to rupture of wooden beams, with rules for proportioning the same, and illustrative examples. As is well known, this branch of the subject has frequently been treated in technical works, but the discussion by the author is perhaps more simple and complete than any that has preceded it. In this portion of the work, as well as in what follows, the author has introduced a feature—which is too often neglected by technical writers, but which cannot be too strongly commended—of giving examples to illustrate the principles and rules, as they are developed; and besides these examples, which are fully worked out, there are "questions for practice," to be solved by the reader, the answers being given at the end of the volume. Although the introduction of these numerous examples greatly increases the size of the work, its value to the student and professional man is augmented in a much greater degree, since the book may be opened to any formula at pleasure, with the certainty of finding the meaning and application clearly illustrated in the same place.

In determining formulas for the strength of floor beams, the author corrects some popular misapprehensions on the maximum loads to which floors are subjected, sustaining his position by reference to experiments made by himself and others. This discussion relates to the greatest load of persons that can be collected upon a floor, and there is little said about the important question of the loads to which the floors of warehouses and similar structures are subjected, no experimental data being given.

In looking over the work the reader will observe some few instances of careless statement and want of precision in the use of technical terms. The general principle is laid down (p. 20) that a sufficient knowledge of the resistance of materials can be obtained from experiments with small test pieces; but it is well known that the exceptions to this principle are at least quite as numerous as the agreements, in the cases of beams and rods of large size. To those who are familiar with the ordinary application of the term "energy" in mechanics, the expression "destructive energy" of a beam (p. 66), whereby is meant its resistance to rupture, may seem open to objection, and there may be equal objection to the statement (p. 84), that in the case of inelastic impact, the effect of the blow is equal to the product of the weight and velocity of the striking body. These criticisms may seem trivial to some, but they are by no means unimportant. The ideas of many readers in regard to the correct use and signification of technical terms are formed by the perusal of such works as the one under consideration, and it is but right that authors should realize the responsibility resting upon them in this regard. The present work contains but few of these inaccuracies, however, and will in general be both safe and profitable reading for those who are interested in the subjects of which it treats. Probably the most glaring inaccuracy to be found is the statement (p. 314) that "the resistance of a beam to flexure or bending is termed its *moment of inertia*," a statement which is directly contradicted by the definition given in the next paragraph.

Following the discussion of the rupture of beams, and the proportions necessary to resist it, is a good elementary treatment of the theory of deflection, and the proportions necessary to prevent excessive or unsafe deflection, rules being established for floor beams and girders, with illustrative examples in each case. It is pointed out that these are the rules to be used in practice, since a beam should not only be strong but should appear so, by having its deflection under a maximum load limited to a definite amount. These principles, as is well known, are generally adopted by intelligent constructors, who base their proportions on the elastic strength of the material rather than on its ultimate resistance; and it seems pertinent to inquire, since the theory of rupture is but little used in practice (not at all for the proportions as finally fixed in the present work), whether an undue space has not been devoted to its consideration. It may, indeed, fairly be asked whether the treatment by the author is not defective in a technical point of view, at least for a modern treatise on the resistance of materials. Be that as it may, the author, in his chapters on deflection, or "deflecting energy," to use his term, covering about 100 pages, discusses the matter very satisfactorily from an elementary point of view, and deduces all the requisite formulas

for the proportions and deflections of floor beams. Although there is apparently nothing original but the arrangement and the illustrative examples, the reader will find it one of the clearest and most useful discussions of the subject in print.

A chapter on "Bridging Floor Beams" follows, showing the beneficial effects of the bracing, in the case of concentrated weight upon a floor. It might have been more satisfactory if the reason for this bracing had been clearly brought out, since, rules having just been established for making the beams sufficiently strong and stiff under maximum loads, the necessity of still further strengthening or stiffening them is not at once apparent.

So far the discussion has related to wooden beams and girders, and next the subject of iron beams, plate, rolled tubular, and cast, is taken up, and the proportions for such cases as occur in architectural practice are determined. These seem to be based upon reliable data, giving results that will be generally safe and economical; and the author points out that in special cases direct experimental data should be obtained by the constructor.

The remaining discussion is devoted to framed girders and roof trusses, which are treated generally by the graphical method and algebraic or arithmetical calculations. Without going very elaborately into the subject, the author covers such cases as will ordinarily occur in the architect's practice, and develops methods that can readily be applied. Then follow 46 tables for use in connection with the rules, embodying experiments on transverse, tensile and crushing strength, made by the author, data drawn from trustworthy sources, and calculations designed to facilitate the use of the formulas. The tables are accompanied by explanatory text, examples being introduced in several instances. There is a classified list of references to the principal formulas and investigations, so that any one can readily be found. There is, in addition, a complete table of contents, and a very carefully prepared index. It will be seen that the ground covered by this work is quite extended, although it is generally confined to transverse strains; and many interesting points have necessarily been omitted in the present notice. Enough has probably been said, however, to convince readers that the work is well worthy of perusal, and will be a valuable addition to the reference library of the professional man. To the architect it will be of especial value, and will doubtless be found by many to supply a want that has long been felt.

The proof-sheets of the work have been read with unusual care, so far as can be judged by carefully checking many rules and examples, and the publishers have done their part by turning out a well-printed book, in tasteful dress.

The *Metalurgical Review* is the title of a new monthly magazine published by David Williams, the publisher of the well-known and successful *Iron Age*. The new magazine is evidently intended to be of the highest class in its specialty—the reduction of ores and the manufacture and working of iron and other metals—something like the well-known *Revue Universelle des Mines*, of Belgium.

The first number (for September) has articles from several writers who will be recognized as authorities, which will doubtless be of great interest to metallurgists. Among these are: "The Mechanical Treatment of Metals," by Prof. R. H. Thurston; "The New Iron District of Ohio," by E. C. Peckin; "Siphon Tap in Lead Smelting," by C. Kirchhof, Jr.; "The Danks Furnace at the Millvale Works," by John I. Williams, the Superintendent of the furnace; "On Steel," by Wm. Metcalf; "Studies of Elemental Iron and its Modifications," by Prof. Henry Wurtz; "Protecting the Lining of Blast Furnaces," by Joseph D. Weeks, etc.

The magazine has 100 octavo pages, and is one of the handsomest of periodicals.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

Albert.—The officers of this new New Brunswick railroad are: A. E. Killam, Manager; H. H. Carvell, Accountant and Auditor; Elisha Tingley, Trackmaster and Auditor. The offices are at Hillsboro, N. B.

Chicago & Eastern Illinois.—The first board of directors of this new company, successors to the Chicago, Danville & Vincennes, is as follows: F. W. Huidekoper, Meadville, Pa.; John M. Dennison, Baltimore; T. W. Shannon, Darius R. Mangum, John N. Brookman, Henry B. Hammond, New York; George W. Gill, Worcester, Mass.; F. H. Story, Boston. The board elected F. W. Huidekoper, President; T. W. Shannon, Vice-President; A. S. Dunham, Secretary and Auditor; J. C. Calhoun, Treasurer; Edmund L. Du Barry, General Superintendent; Adam Holliday, General Freight and Passenger Agent. There is no change in the immediate management of the road.

Chicago & Northwestern.—Mr. R. W. Hamer is appointed Purchasing Agent, in place of Jason H. Carpenter, assigned to other duties. His office is in Chicago. Mr. Hamer was for some time fuel agent of the road—a position of great importance on that line.

Cincinnati, Sandusky & Cleveland.—Mr. Charles L. Williams has been appointed Car Accountant, with office in Springfield, O., in place of S. E. Sloan.

Cincinnati Southern.—Mr. Rufus King, Jr., is appointed Paymaster and Purchasing Agent, with office in Cincinnati, O.

Holyoke & Westfield.—At the annual meeting in Holyoke, Mass., Sept. 1, the following directors were chosen: R. P. Crafts, John Delaney, C. B. Harris, Timothy Merrick, J. H. Newton, J. C. Parsons, Levi Perkins, August Sturberg, Wm. Whitney. The board elected J. C. Parsons President; Wm. Whitney, Vice-President; J. P. Buckland, Clerk; George W. Prentiss, Treasurer. The road is leased and worked by the New Haven & Northampton Company.

Michigan Central.—Mr. John A. Grier has been appointed General Freight Agent, in place of J. Q. A. Bean, resigned. He has been assistant to Mr. Bean since March 1876, and was previously on the Pittsburgh, Cincinnati & St. Louis.

Northern Pacific.—Mr. E. T. Williams is Purchasing Agent, with office in St. Paul, Minn.

Northern Pacific.—Mr. W. Wayne Vodge has been appointed General Freight and Passenger Agent of the Pacific Division. He has been on the Pennsylvania road for a long time.

Newport & Wickford.—At the annual meeting in Providence, R. I., Sept. 3, the following directors were chosen: George M. Miller, Providence; L. Vaughn, Wickford, R. I.; John T. Bush, John N. A. Griswold, Newport, R. I.; Charles H. Russell, New York. The board elected George M. Miller President; John T. Bush, Clerk and Treasurer.

Pennsylvania.—Mr. J. K. Shoemaker is appointed Acting Passenger Agent, Middle District, in place of Capt. J. N. Abbey, who is temporarily relieved from duty on account of ill-health.

Philadelphia & Atlantic City.—Mr. Wm. Massey has been chosen President, in place of Samuel Richards, resigned. Mr. J. Naramore (late of the Tuckerton Railroad) is appointed Superintendent; that office has hitherto been filled by Mr. Theodore Wurts, Consulting Engineer.

St. Paul & Pacific, First Division.—Mr. A. Guthrie has been appointed Purchasing Agent, with office in St. Paul, Minn.

St. Joseph & Des Moines.—A new organization by this name has the following directors: Arthur Donahay, E. A. Garvey, Robert Green, W. B. Johnson, John L. Motter, James H. Pickering. Office at St. Joseph, Mo.

Tuckerton.—Mr. J. J. Pharo has been appointed Superintendent, in place of J. Naramore, who has gone to the Philadelphia & Atlantic City road. Mr. Pharo's office is at Tuckerton, N. J.

Utah Central and Utah Southern.—Mr. D. A. Swan has been appointed Purchasing Agent, with office in Salt Lake City, Utah.

Wilmington & Northern.—Mr. L. A. Bower has been appointed General Freight and Passenger Agent, with office at Coatesville, Pa.

Western North Carolina, Western Division.—At the annual meeting in Asheville, N. C., Aug. 25, the following directors were chosen by the stockholders: Thomas H. Clay on, James H. Rumbough, C. M. McCloud, C. A. Nichols. The appointment of State directors was lately noted. The board re-elected W. W. Rollins, President; J. B. Stewart, of New York, Attorney.

PERSONAL.

—Mr. Edwin L. Stanton, a rising lawyer of Washington and for several years past counsel for the Baltimore & Potomac Railroad Company, died in Washington, Aug. 29, after a long illness. He was a son of Edwin M. Stanton, the famous Secretary of War.

—Mr. Samuel H. Walley, of Boston, who died at Nantasket Beach, Mass., Aug. 27, was at one time for several years Treasurer of the Vermont Central. He was also the first Treasurer of the Wisconsin Central Company.

—Mr. Alvin Adams, the founder, and for many years the head, of the firm of Adams & Co. and its successor, the Adams Express Company, died at his residence in Watertown, Mass., Sept. 2, aged 75 years.

—Capt. Ryder, the projector and the chief builder of the old Alton & Terre Haute road, died at his residence in Alton, Ill., Aug. 29, aged 82 years. He was one of the pioneers of that region and was the founder or several towns on the line of his road.

—Mr. W. B. Prickett retires from the office of Purchasing Agent of the Hannibal & St. Joseph Railroad, and no appointment will be made to the vacancy.

—Gen. J. W. Sprague, late General Superintendent and Land Commissioner of the Pacific Division, Northern Pacific Railroad, is now General Superintendent of the Oregon Steam Navigation Company, which owns a fleet of 30 vessels employed in the coasting service on the Pacific Coast.

—Mr. Samuel Richards has resigned his position as President of the Philadelphia & Atlantic City Railroad Company, but remains a director of the company.

—Capt. J. N. Abbey, Passenger Agent of the Middle District, Pennsylvania Railroad, has been temporarily relieved from duty on account of ill health.

—Mr. Robert Zimmerman, some years ago an extensive railroad operator in Michigan, died in strathroy, Ont., Aug. 26. He built the Kalamazoo & South Haven and a part of the Grand Rapids & Indiana road. He lost nearly all his money in some recent speculations.

—The two closely connected firms of H. R. Payson & Co., of St. Louis, and F. E. Canda & Co., of Chicago, have filed voluntary petitions in bankruptcy. F. E. Canda & Co. secured a two years' extension from their creditors in 1873, and made an assignment in 1876; their extensive car shops in Chicago have since been sold to the United States Rolling Stock Company. H. R. Payson & Co. built the Cairo & St. Louis road, and it is the liabilities incurred on account of that work which have broken them down. The two firms, though nominally distinct, were composed of the same persons.

—Mr. Samuel L. Phillips, President of the Third Avenue (street) Railroad Company of New York, sailed for Europe Aug. 29, and it is announced that he has gone for the purpose of studying and reporting upon rapid transit as worked out in London and other European cities.

—Doubtless all of our readers have seen in the daily papers the obituaries of Brigham Young, the Mormon Prophet and President, but they may not know that he was in some sort a railroad man, being a director of the Utah Northern and a large owner in the Utah Central and Southern roads. He took little part in the affairs of those roads, however, leaving their active management to his son, John W. Young, and to Bishop John Sharp.

—Mr. J. Q. A. Bean, for several years past General Freight Agent of the Michigan Central Railroad, has resigned his position on account of ill health, and will remove from Chicago to the East. Mr. Bean has been on the Michigan Central for several years and was previously on the Chicago, Burlington & Quincy.

TRAFFIC AND EARNINGS.

Lake and Canal Rates in August.

The large movement of property from the interior by water is having its effect on prices. Although August is usually a dull month, on account of its covering the period when there is little old wheat left to ship and scarcely any new arriving, it has been a busy month this season, and shows the best average freight rates of any August since 1873. The improvement by the lakes has been very marked, as will be seen from the following statement giving the average freight on wheat and corn from Chicago to Buffalo by water, and the average freight on the same cereals from Buffalo to New York by canal for ten years:

	Lake.		Canal.	
	Wheat.	Corn.	Wheat.	Corn.
	cents.	cents.	cents.	cents.
1868.....	7.8	6.6	14.1	11.6
1869.....	6.0	4.8	14.0	12.6
1870.....	5.0	4.7	9.4	9.2
1871.....	6.2	5.7	11.8	10.8
1872.....	9.6	8.8	12.0	11.0
1873.....	6.5	5.6	10.6	9.6
1874.....	3.1	2.1	9.0	8.0
1875.....	2.5	2.2	8.1	7.3
1876.....	2.3	1.8	5.8	5.3
1877.....	4.0	3.6	7.9	6.4

The average rate on corn is just double that for the same

month in 1876; but it must not be inferred from this that there is a fortune in every lake vessel now. The above averages represent fair living rates for large vessels and nothing more. There is no profit in them for small or even ordinary sized vessels, when wear and tear and deterioration are computed. Unfortunately, however, a decline has already taken place. On Saturday, Sept. 1, reported rates at Chicago were only 2½ cents on corn.

But the canal statement makes a better showing for the boatmen. A 7-cent freight with the present tolls is equal to 8 cents last year under the old sheet. The average for last month, therefore, was over 2 cents in excess of that for August, 1876. It is a paying rate. The effect of the high prices has brought into commission everything that will float. Old boats that had been abandoned two and three years ago have been repaired and are now doing service, while most of the antiquated towing crafts that navigated the laterals are finding profitable work on the Erie. The season of 1877 is proving a good one for canal carriers; which is exceedingly fortunate, as the poor boatmen could not have stood up under another year like the last.—*Buffalo Commercial Advertiser*.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Eight months ending Aug. 31:				
Chicago, Milwaukee & St. Paul.....	\$4,192,460	\$5,209,562	Dec.	\$1,007,102 19.5
St. Louis, Iron Mt. & Southern.....	2,587,141	2,251,133	Inc.	336,008 14.9

Seven months ending July 31:

Atchison, Topeka & Santa Fe.....	\$1,223,813	\$1,244,654	Dec.	\$20,841 1.7
Net earnings.....	519,264	604,416	Dec.	85,152 14.1
Per cent. of exps.....	37.57	51.44	Inc.	6.13 11.9
New Jersey Midland.....	376,352	350,650	Inc.	25,702 7.3
Net earnings.....	87,071	.....	.....	.....
Per cent. of exps.....	76.86	.....	.....	.....
St. Louis & Southeastern.....	578,970	541,922	Dec.	3,952 0.5
Net earnings.....	97,566	90,230	Dec.	1,664 1.7
Per cent. of exps.....	83.14	82.94	Inc.	0.20 0.2

Six months ending June 30:

Chicago, Rock Island & Pacific.....	\$3,238,890	\$3,385,435	Dec.	\$146,545 4.3
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Month of June:

Chicago, Rock Island & Pacific.....	\$536,234	\$659,196	Dec.	\$122,962 18.7
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Month of July:

Atlantic & Great Western.....	\$301,730	\$292,500	Inc.	\$9,170 3.1
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Houston & Texas Central.....	161,878	148,375	Inc.	13,503 8.9
Net earnings.....	37,846	495	Inc.	37,350
Per cent. of exps.....	76.57	99.65	Dec.	23.08 33.2
Kansas Pacific.....	274,362	234,022	Inc.	40,340 17.2
New Jersey Midland.....	63,490	64,646	Dec.	1,156 1.8
St. Paul & Sioux City.....	40,897	55,016	Dec.	14,119 26.2
Sioux City & St. Paul.....	21,048	30,305	Dec.	9,158 30.3

Month of August:

Chicago, Milwaukee & St. Paul.....	\$677,000	\$563,775	Inc.	\$113,225 20.1
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St. Louis, Iron Mt. & Southern.....	392,600	274,160	Inc.	88,440 32.2
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Third week in August:

Denver & Rio Grande.....	\$19,410
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Kansas Pacific.....	62,921	\$43,276	Inc.	\$19,645 45.4
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Two weeks ending Aug. 24:

Great Western, of Canada.....	\$135,619	\$140,118	Dec.	\$4,499 3.2
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Two weeks ending Aug. 26:

Grand Trunk.....	\$355,666	\$333,032	Inc.	\$22,634 6.8
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East Bound Freight Rates.

At a meeting held in Chicago, Sept. 3, grain rates were increased five cents per 100 lbs., making the same as fourth-class rates. Grain from Chicago to Baltimore is now 32 cents; Philadelphia, 33; New York, 35, and Boston 40 cents. St. Louis rates have also been increased, the grain rate to New York being raised six cents per 100 lbs.

Delaware Peach Traffic.

On Aug. 29 there passed Wilmington, Del., 127 car-loads of peaches, of which 54 car-loads were bound to New York, 29 to Philadelphia, 16 to Boston and the rest to other points. The total shipments of the season, over the Delaware Railroad, up to and including Aug. 29, were 3,342 car-loads, or more than twice as many as last year.

Grain Shipments to Charleston.

The St. Louis *Republican* notes a shipment of 100 car-loads of grain from Hopkinsville, Ky., on the St. Louis & Southeastern road, by way of Augusta, Ga., and the Port Royal Railroad to Charleston, S. C., for export to Europe. Another shipment is noted of 500 barrels of flour from St. Louis to Liverpool by way of Charleston, starting from St. Louis by the Iron Mountain line, this shipment also going by Augusta and the Port Royal road. It is not at all probable that any considerable business can be done by this port, which is, however, about as near to St. Louis as any other port except New Orleans.

Erie Canal Traffic.

The business of the Erie Canal at Buffalo from the opening to Aug. 31 was as follows:

	1877.	1876.	Inc. or Dec.	P. c.
No. of boats cleared.....	3,466	2,722	Inc.	744 27.3
Tolls received.....	\$232,390 65	\$222,003 51	Dec.	\$89,612 86 27.8

The canal opened May 8 in 1877 and May 4 in 1876.

Norfolk Cotton Business.

The receipts of cotton at Norfolk, Va., for August were: 1877, 7,013; 1876, 1,293; increase, 5,720 bales, or 440 per cent. For the cotton year, from Sept. 1 to Aug. 31 the receipts were:

	1876-77.	1875-76.	Inc. or Dec.	P. c.
Atlantic, Mississippi & Ohio R. R.....	226,554	204,714	20,840	10.2
Seaboard & Roanoke R. R.....	252,460	219,779	32,681	14.9
Canal and otherwise.....	41,831	40,504	1,327	3.3

Total, bales..... 519,845 461,997 57,848 11.8

The shipments were 508,693 bales, 391,838 bales coastwise, 112,245 to Great Britain and 4,610 to other European ports. The increase in shipments was 8.3 per cent. Of the receipts for 1876-77, 155,935 bales were local cotton, that is, consigned to Norfolk, the rest being consigned to points beyond.

Coal Movement.

Coal tonnages for the week ending Aug. 25 are reported as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Anthracite.....	279,514	323,110	Dec.	43,596 13.5
Semi-bituminous.....	100,433	79,804	Inc.	20,629 41.8
Bituminous, Pennsylvania.....	15,767	35,599	Dec.	19,742 55.6

The bituminous tonnages are very low, owing chiefly to the strike of the gas-coal miners in Western Pennsylvania. The Cumberland region is now fully at work and the shipments last week were very large.

The coal operators in the Lehigh region, who granted the 10 per cent. advance asked by their miners and resumed work, will probably be compelled to stop again, the Lehigh Valley Railroad Company having given notice that it will not carry

any coal for parties paying the advanced wages. This order was afterwards recalled.

Coal receipts at San Francisco for the seven months ending July 31 were:

	Tons.
Mt. Diablo.....	21,959
Bellingham Bay and Coos Bay.....	56,941
Seattle.....	54,532
British Columbia.....	17,656
Eastern, anthracite and Cumberland.....	36,900
Australian.....	45,330
English.....	283,313

There is an increase in the Pacific Coast coals, though freights on English and Australian are very low. All this coal comes by water.

Chicago & Texas Freight Rates.

A new tariff on freight from Chicago to Texas points has been adopted, rates per 100 lbs. to the principal Texas points being as follows:

Chicago to	First class.	Second class.	Third class.	Fourth class.
Sherman.....	\$1 88	\$1 55	\$1 25	\$1 10
Denison.....	1 88	1 55	1 25	1 10
Houston.....	1 88	1 40	1 15	95
Galveston.....	1 88	1 40	1 15	95
Austin.....	1 88	1 60	1 35	1 10
East Columbia.....	2 18	.....	.....	1 20
San Antonio.....	2 93	2 40	2 10	1 85

These rates took effect Sept. 1.

Grain Movement.

Receipts and shipments of grain of all kinds for the week ending Aug. 25 were, in bushels:

	1877.	1876.	Increase.	P. c.
Lake ports' receipts.....	5,331,315	4,280,052	1,051,263	24.6
" " shipments.....	4,632,809	3,872,963	759,846	19.6
Atlantic ports' receipts.....	4,493,252	3,227,690	1,265,562	39.2

Of the shipments from lake ports 22 1/2 per cent. were by rail this year, against 39 1/2 in 1876, 32 1/2 in 1875, and 19 1/2 in 1874.

Of the receipts at Atlantic ports, 50.9 per cent. went to New York, 20 to Baltimore, 12.6 to Philadelphia, 7.9 to Boston, 5.7 to Montreal, 2.6 to New Orleans, and 1.3 to Portland.

Baltimore grain receipts in August were as follows:

	1877.	1876.	Inc. or Dec.	P. c.
Flour, barrels.....	113,828	128,002	Dec. 14,174	11.1
Wheat, bushels.....	1,579,943	626,205	Inc. 953,738	152.3
Corn.....	1,586,409	1,572,925	Inc. 13,484	0.9
Other grain.....	171,562	121,638	Inc. 49,924	41.4

Total, bushels..... 3,907,054 2,960,778 Inc. 946,276 32.0

For the eight months ending Aug. 31 the receipts were as follows:

	1877.	1876.	Decrease.	P. c.
Flour, barrels.....	872,825	902,734	29,909	25.5
Grain, bushels.....	19,009,213	20,467,278	1,458,065	7.1

Total, bushels..... 22,373,338 24,980,948 2,607,610 10.4

The great increase of wheat in August is notable.

The Buffalo Commercial Advertiser reports grain receipts at that city up to Aug. 31 as follows, flour in barrels and grain in bushels:

	1877.	1876.	1877.	1876.
By lake.....	Flour..... 336,857	Grain..... 28,608,307	Flour..... 387,084	Grain..... 24,198,965
By rail.....	657,300	8,901,640	747,400	9,016,900
Totals.....	994,157	37,510,547	1,134,484	33,215,865

This shows a decrease of 140,327 barrels, or 12.4 per cent., in flour, but an increase of 4,295,582 bushels, or 12.9 per cent., in grain. The rail receipts this year were 66.1 per cent. of the flour and 23.7 per cent. of the grain, the lake movement showing an increase, while the rail movement decreased. The shipments eastward of grain received by lake for the same period were:

	1877.	1876.	Inc. or Dec.	P. c.
By rail, bushels.....	4,171,064	7,741,187	Dec. 3,570,123	46.1
By canal.....	20,815,935	15,416,828	Inc. 5,399,107	35.0

Total..... 24,986,999 23,158,015 Inc. 1,828,984 8.0

The rail shipments were 16.7 per cent. of the whole this year, against 33.4 per cent. last year. The canal opened May 8 in 1877 and May 4 in 1876.

The receipts of grain of all kinds at Chicago and of wheat at Milwaukee for the month of August were:

	1877.	1876.	Increase.	P. c.
Chicago.....	12,683,888	9,141,017	3,542,871	38.9
Milwaukee.....	1,445,813	646,089	799,724	123.8

The receipts of grain at Northwestern markets Aug. 1 to 25, for five years, have been:

	1877.	1876.	1875.	1874.	1873.
Flour.....	360,780	373,085	324,182	390,683	408,039
Wheat.....	4,598,284	3,327,005	5,360,801	7,922,516	7,254,138
Corn.....	11,387,044	9,435,588	4,911,471	5,600,772	9,866,529
Oats.....	2,295,537	1,727,713	2,909,587	3,623,101	3,081,811
Barley.....	160,952	121,012	166,304	307,900	202,553
Rye.....	607,262	217,131	269,908	191,785	226,867

Total grain, 19,349,079 14,828,449 19,618,071 17,646,074 20,631,893

This year's movement is thus 30 1/2 per cent. greater than that of 1876, 42 per cent. greater than that of 1875, 10 per cent. greater than that of 1874, and only 6 1/2 per cent. less than that of 1873—the greatest August movement on record.

THE SCRAP HEAP.

The Bosphorus Bridge.

Capt. James Eads, the well-known engineer of the St. Louis Bridge, now proposes, it is said, to undertake a still greater work, a bridge to connect Europe and Asia across the Bosphorus at Constantinople. The bridge proposed would be 6,000 feet long, 120 feet above the water and 100 feet wide, giving room for a street and for railroad tracks also. Fifteen spans, steel arches resting on granite piers, would be required, the central arch to be of 750 feet span, on piers 50 feet thick, built at a point where the water is over 100 feet deep with a very strong current. The two arches adjoining the central arch would be of 400 feet span, whence the spans would gradually diminish towards each shore, the two shore arches to be of 200 feet span only. The estimated cost of the bridge is \$25,000,000, and the time required to build it six years. Its advocates claim that it will be required not only for local travel, but for the great railroad which is to connect Constantinople with India by way of the Euphrates valley and the Khyber Pass.

Master Car-Painters' Association.

The eighth annual meeting of this association will be held at Albany, N. Y., on Wednesday, Sept. 19. The headquarters will be at the Eldridge House, State street. The subjects that will receive special attention are "Car Head-Linings," "Surfacing," "The Most Suitable Styles of Ornamentation," also "Sizing and Colors." Master car and locomotive painters throughout the United States and Canada are requested to be present and take part in the proceedings. Members of committees who may be unable to attend, are requested to forward their reports ten days previous to the meeting to R. McKeon, Secretary of the Association, at Kent, Ohio.

Railroad Speed in France.

An English journal says that the fastest average speed on

French railroads is attained on the line from Paris to Bordeaux. The distance between these points is 350 miles, and the journey is performed in 9 hours 10 minutes, giving an average of 39 1/2 miles an hour. After this comes the run between Calais and Paris, a distance of 184 miles, which is traversed in five hours, at the rate of 36 3/4 miles an hour. From Paris to Angers, a distance of 191 1/2 miles, the passenger is carried in 5 hours 25 minutes, at the average speed of 35 1/2 miles an hour; and between Paris and Soissons, or 65 1/2 miles, the journey is made in 1 hour 50 minutes, being at the rate of 35 1/2 miles an hour.

Steam on Street Cars.

Mr. John Stephenson, of New York, has written to the *Age of Steel* to correct some statements made in that paper. He says, that about 1835, Mr. Wm. T. Ames, an iron founder and machinist, having works on Eldridge street in New York, constructed several small street cars or "motors." These were placed in advance of the street cars in the place of and doing the work of horses. The cars were emphatically "street cars," and operated by horses or steam indiscriminately. These steam motors were continued in use on Fourth avenue, from Fourteenth street, now the boundary side of Union Square, and from thence running northward—all within the city. A sad accident from the explosion of the boiler of one of those "motors" caused the city authorities to prohibit the use of steam below Twenty-seventh street.

A Solid Conductor.

The *Sedalia (Mo.) Democrat* says: "Austin P. Speed, conductor of the Osage Valley Railroad, is the largest conductor in the United States. His weight is 350 lbs.; his age is 27, waist measures 56 inches, breast measures 50 inches and hip measures 45 inches."

OLD AND NEW ROADS.

Albert.

This road is now fully opened for traffic from Salisbury, N. B., southwest to Hillsboro, about 24 miles. It is intended chiefly to carry coal from the mines about Hillsboro to the Intercolonial.

Allegheny, Kennerdell & Clintonville.

Nearly all the grading on this road between Scrubgrass, Pa., and Kennerdell, is done, and the ties and rails are ready. The bridge over the Allegheny at Scrubgrass, which has three spans of Howe truss, 150 feet each, is well advanced and will probably be ready for use by Sept. 15. As soon as it is done tracklaying will be begun. The road is to be worked by the Allegheny Valley.

Atchison, Topeka & Santa Fe.

The Treasurer's report for July and the seven months ending July 31, on a mileage of 711 miles, is as follows:

	July.	Seven months.
Freight earnings.....	\$120,084 87	\$783,680 56
Passengers.....	60,030 63	389,805 49
Mails, express, etc.....	7,026 71	50,327 11
Total.....	\$187,142 21	\$1,223,813 16
Operating expenses.....	111,096 70	704,549 50
Net earnings.....	\$76,045 51	\$519,263 66
Per cent. of expenses.....	59.36	57.57

Compared with July, 1876, on the same mileage, there was a decrease of \$11,709.14, or 5.9 per cent., in gross, and of \$11,892.68, or 13.5 per cent., in net earnings. For the seven months, the average in 1876 being 687 miles worked, there was a decrease of \$20,840.42, or 1.7 per cent., in gross, and of \$85,152.06, or 14.1 per cent., in net earnings. The proportion of expenses to earnings in 1876 was 57.77 per cent. for July, and 51.44 per cent. for the seven months.

Atlantic & Great Western.

The following order has been issued by General Superintendent Cooper: "The prospects are for a season of heavy business, when our equipment will be taxed to its utmost, and the tendency of men working by the trip will be to do as much as possible, and fully appreciating their desire to earn all they can, and yet realizing the great danger incident to men being overworked, it is hereby ordered that no freight conductor, engineer, fireman or brakeman, after having doubled any division of this road, shall be sent out, or permitted to go out, with engine or train, until they have had at least eight hours of rest. This order is imperative, and will not be varied from, except in case of accident."

Baltimore & Ohio.

It is announced that this company has finally completed the negotiation of the proposed issue of \$3,000,000 new 5 per cent. bonds with J. S. Morgan & Co., of London. These bonds are secured by a first mortgage on the Chicago Division, which had previously no bonded debt, and are at the rate of \$30,400 per mile on that line. The rate at which the bonds are taken is not made public. The proceeds are to be used in paying off the floating debt of the company.

Bellevue & Liscomb.

A company has been organized to build a narrow-gauge road from Bellevue, Ia., on the Mississippi, 22 miles below Dubuque, westward through Garryowen, Cascade and Monticello to Liscomb in Marshall County, about 130 miles.

BillERICA & Bedford.

This road is now completed from Bedford, Mass., on the Middlesex Central road, to North BillERICA, about eight miles. The road is intended to serve the local traffic and is of two feet gauge; it is equipped with two engines and 11 cars and is said to have cost about \$50,000. The road and equipment have been built under the supervision of Mr. George E. Mansfield, who has long advocated this very narrow gauge for local lines. Trains began to run Sept. 1, and the road will be formally opened in about two weeks.

Buffalo & Jamestown.

The Jamestown (N. Y.) *Democrat*, of Aug. 29, says: "It has been officially announced to Judge Marvin that the Buffalo & Jamestown Railroad has appealed its case to the Supreme Court of the United States, Judge Strong granting a writ of error. Judge Marvin does not believe the Court will sustain the writ of error. If it does, then the whole thing will have to be again opened and argued."

Burlington, Cedar Rapids & Northern.

This company has completed an extension of its main line from the old terminus at Plymouth, Ia., northwest six miles to a junction with the Central Railroad of Iowa, near Shell Rock, and has concluded an agreement for the use of the 10 miles of the Central track from the junction to Northwood. Trains now run through to Northwood, 16 miles beyond Plymouth and 235 miles from Burlington.

From Northwood the company has graded and is now laying track on a further extension of 17 miles to Albert Lea, Minn., where the road will connect with the Southern Minnesota and with the extension of the Minneapolis & St. Louis, now under construction.

Camden & Atlantic.

This company has reduced the fares between Philadelphia and Atlantic City to \$1.50 for single trip and \$2 for excursion tickets. This action is taken partly to meet the competition of

the new road, and partly also to stimulate travel as the season declines.

Canada Southern.

The *New York Evening Post*, of Sept. 5, says: "Respecting the negotiations for the control of the Canada Southern Railroad, it being of importance to any one of the northern trunk line companies because of its low grades and straight lines, we hear that there are two parties in the field for it, and that each will have a conference with the Canada Southern representatives before the present week closes." It has been generally understood that this road was controlled by the Vanderbilt interest.

Central, of Iowa.

At Des Moines, Ia., Aug. 31, after hearing arguments for three days, the United States Circuit Court decided to confirm the recent sale of the road to the Farmers' Loan & Trust Company, trustees. The three parties of bondholders, known as the Cate, Gilman and Sage-Cowdrey parties, have each formed a company and each applied to the Court for recognition as the company to which the trustees should be authorized to convey the property. The Court decided to leave this to a vote of the bondholders, and directed the master to take such a vote in writing.

The Sage-Cowdrey party subsequently gave notice of an appeal from the order confirming the sale.

Reference was then made by the Court to the attacks upon Judge Dillon by Isaac M. Cate, of Boston, the former President of the company, which were noticed in the *New York Nation* and some other papers. Portions of the record were read, to show the falsity of the charges, and all the counsel in the case joined in pronouncing them unfounded. Subsequently a meeting of the bar was held to arrange for further action in the matter.

Central, of New Brunswick.

The proposed route of this road is from Fredericton, N. B., north by east to the head of Grand Lake, about 40 miles, and thence in nearly the same direction to the Intercolonial at Weldford on the Richibucto, about 50 miles further, with a branch from the head of Grand Lake southward to the Intercolonial at Norton, 33 miles from St. John. The road is to be of 3 ft. 6 in. gauge, the same as the New Brunswick road, and will open a large section of fertile country, besides furnishing transportation to the coal beds about Grand Lake, which are now only worked to a very small extent, owing to the difficulty of getting the coal to market. A change of location is now advocated with many arguments in its favor. It is, instead of running to Weldford, to build from Grand Lake northeast to the junction of the Carin and Miramichi rivers, about 50 miles, and thence down the Miramichi some 28 miles to the Intercolonial, from which road a branch extends to Chatham, near the mouth of the river. It is also proposed to extend the Norton Branch to St. John, in order to secure better shipping facilities for coal, and to avoid the necessity for transshipment at Norton, and also to complete a rail connection between St. John and the New Brunswick road without change of gauge. The Grand Lake coal is of excellent quality, and it is thought that a large coal business with shipping can be done on the Miramichi, as well as at St. John.

Charlotte, Columbia & Augusta.

It is proposed to build a branch from this road at or near Pine House, S. C., northwest to the town of Edgefield, about eight miles. The company has offered to furnish the iron and operate the branch if the people of Edgefield will grade it and furnish the ties.

Colorado Central.

On the extension of the standard gauge line from Longmont, Col., north, track is now laid from the junction with the Union Pacific at Hazard southward 14 miles. At that point the tracklayers have been delayed by an unfinished rock cutting, but it is expected that the rails will reach Fort Collins next week and Longmont early in October.

Cincinnati, Hamilton & Dayton.

An order has been issued increasing the day's run for freight crews from 60 to 90 miles, the difference being made by changing the runs of freight trains. As no change has been made in a day's pay, some discontent is reported among the employees.

Subsequently, after a conference between the President and a committee of trainmen, the order was so modified as to continue 60 miles (Cincinnati to Dayton) as a day's run for men working on way freight, the through freight run being increased from 60 to 80 miles.

Notwithstanding this settlement, however, the firemen and brakemen struck on Aug. 31 and all freight traffic was stopped until Sept. 3, when the men were persuaded by their committee to accept the compromise, and work was resumed.

Columbus & Gallipolis.

The work on the grading near McArthur, O., has been suspended, owing to a difficulty between the contractor and his workmen about pay. It was expected that the trouble would be settled and work resumed this week.

Cleveland & St. Louis.

This is the name of a new company organized to build a narrow-gauge railroad from Cleveland, O., west by south to the Indiana line in Van Wert County, about 175 miles. It is to connect with a projected line across Indiana.

Chicago, Rock Island & Pacific.

It is announced that this company has completed a negotiation for the sale to a syndicate represented by Drexel, Morgan & Co. and Winslow, Lanier & Co., of New York, of the remaining \$3,000,000 of its new 6 per cent. loan. In consequence of this arrangement the outstanding 7 per cent. bonds will be called in and paid off on Jan. 1, 1878, at 105.

Chicago, Danville & Vincennes.

In Chicago, Aug. 28, the purchasers of this road held a preliminary meeting to arrange for the organization of a new corporation, and then proceeded to make a personal inspection of the property.

The new company was fully organized at a meeting held in Chicago, Aug. 31, and, as expected, the new company was named the Chicago & Eastern Illinois. The necessary certificates have been executed and filed.

The Indiana Division has already been reorganized under the name of the Covington & State Line, and an agreement of consolidation with the Illinois company executed, so that the new Chicago & Eastern Illinois Company will own the entire line, both in Illinois and Indiana.

Central, of New Jersey.

In the United States Circuit Court at Pittsburgh last week, three strikers who were engaged in stopping trains on the Lehigh & Susquehanna Division, were sentenced to \$100 fine and costs and 90 days' imprisonment. This sentence was for contempt of court, the Receiver holding possession in Pennsylvania through an order of the United States Court.

Denver & Rio Grande.

The La Veta Branch is now in operation to Garland City, Col., 50 miles west by south from the junction with the main line at Cucharas and six miles beyond the late terminus at Greyback Gulch. The terminus of the branch will probably remain at Garland for some time.

Erie.

The very elaborate inventory of the property of this company made by Col. George T. Balch, to which frequent reference has been made, has been finally completed and was formally filed with the Court Sept. 1. It includes all property, fixed and movable, of every description, and in whatever condition it may be, and is probably the most complete inventory ever made.

Fitchburg.

The work of widening the road bed of the Vermont & Massachusetts Division for the second track from Fitchburg, Mass., to South Ashburnham is nearly completed, and, as part of the work, the line has been straightened at several points. The stone arch bridge over the Nashua River at Fitchburg is being widened for the second track and the old highway bridge near by is to be replaced with a double-track iron bridge.

Flint & Pere Marquette.

A dispatch from East Saginaw, Mich., Aug. 31, says: "The Flint & Pere Marquette Railway Company have reduced the rate of wages 10 per cent., to take effect to-morrow. This does not apply to low-priced labor. It is understood that the men accept the reduction."

Freehold & New York.

The track on this road is now laid from Freehold, N. J., northward to the crossing of the New Jersey Central's Long Branch Division at Matawan, a distance of 13 miles, leaving 1 1/2 miles to be laid to reach the terminus at Keyport. Sidings have been laid at several points, and freight trains run, though no regular trains have been put on. The work of building the depots along the line has been begun, but no time for the opening of the road has been fixed as yet.

Foreclosure Sales.

Sales of railroad property under legal process are noted as follows:

Mansfield, Colchester & Lake Michigan. Aug. 28, under a decree of foreclosure granted by the United States Circuit Court. Bought for \$500,000 by Mr. Joseph Lesley for account of the bondholders. The sale included the property of the company in Ohio, consisting of 44 miles of finished road, from Mansfield, O., to Tiffin, 44 miles, and the right of way, franchises, etc., from Tiffin to the Michigan State line. The road is worked by the Pennsylvania Company.

St. Louis, Lawrence & Western.—The section of this road from Lawrence, Kan., to Carbondale, 31 miles, was sold in Lawrence, Aug. 29, under a decree of foreclosure granted by the United States Circuit Court, and bought by Robert E. Carr, of St. Louis, for \$43,335. This section of the road was formerly the Lawrence & Southwestern, and was consolidated with the St. Louis, Lawrence & Denver under the present name several years ago. The eastern section, from Lawrence to Pleasant Hill, Mo., was sold under its separate mortgage last February. Mr. Carr, the purchaser, is President of the Kansas Pacific.

Louisville, New Albany & St. Louis. in Springfield, Ill., Aug. 30. Bought for account of the bondholders for \$5,000. The sale covered only that portion of the line in Illinois, the Indiana section having been sold some time ago. The finished section of the road is 29 miles long, from Albion, Ill., eastward to Princeton, Ind., about 18 miles being in Illinois and 11 in Indiana.

The New Haven & Redstone. a partly finished line from Brownsville, Pa., east to Conneville, 10 miles long, was sold in Uniontown, Pa., Aug. 31, to satisfy a judgment sued out by Philip Collins, of Philadelphia. Bought for \$10,175 by Mr. Collins and John Wilson & Sons, of Pittsburgh. It is said that the purchasers will complete it and use it for carrying coal and coke to the Southwest Pennsylvania.

The Wheeling, Pittsburgh & Baltimore road was sold in Pittsburgh, Aug. 30, by the United States Marshal, under a judgment sued out by the original contractors who built the road, some 20 years ago. It was sold subject to a mortgage for \$103,000, and bought for \$4,100 by Wm. Keyser, for account of the Baltimore & Ohio Company. The road is 32 miles long, from Wheeling, W. Va., to Washington, Pa.; it was originally known as the Hempfield Railroad and was reorganized under the present name in 1871. It has been for a long time worked by the Baltimore & Ohio, which now acquires full ownership.

Future sales of railroad property are announced as follows: **The Montgomery & Eschault** road will be sold in Montgomery, Ala., Nov. 12, by R. W. Healy and J. W. Dimmick, Special Master Commissioners, under decrees of foreclosure of the first and second mortgages, granted by the United States Circuit Court. The sale will be made subject to a claim of the South & North Alabama Company as the same may be finally adjudicated in a suit now pending.

Hannibal & St. Joseph.

An amended petition filed by the parties who have applied for the appointment of a receiver charges that nearly \$50,000 have been expended for services rendered by State officers, presumably for forwarding or concealing known corruption in the management. This has caused some local excitement, and a good deal of interest in the hearing of the application, which was to begin Sept. 3.

The officers of the company claim that this application is only an attempt made by certain parties to oust the present management and to secure for themselves control of the road.

Kansas City, St. Louis & Chicago.

Several meetings have been held in Kansas City and at towns along the proposed line, in aid of this company, which is organized to extend the Chicago & Alton's leased Louisiana & Missouri River line to Kansas City. At a recent meeting in Kansas City a considerable amount in stock subscriptions was promised. The line will be about 150 miles long, running from Mexico westward to Glasgow, where it will cross the Missouri and run south of that river and between it and the Missouri Pacific road to Kansas City. It is understood that its construction depends partly upon the amount of local aid which can be secured.

Kingston & Pembroke.

This company is preparing to let contracts for 28 miles of road, which will extend the line to the Madawaska River, about 60 miles northward from Kingston, Ont.

Lake Shore & Michigan Southern.

It is stated that this company has provided for the payment of the \$2,682,000 Michigan Southern bonds which fall due Nov. 1, by the sale of a sufficient amount of its first consolidated bonds to furnish the amount required in addition to the sinking fund payment of \$250,000, which will be applied to payment of the old bonds. The price at which the consolidated bonds were sold is not stated. The new bonds were bought by Messrs. Kuhn, Loeb & Co., of New York.

Lewisburg, Centre & Spruce Creek.

The track of this road is now laid to Spring Mills, in Centre County, Pa., 25 miles eastward from the old terminus at Laurelton, and 44 miles from the junction with the Philadelphia & Erie at Montandon. The road is worked by the Pennsylvania and trains are now running through to Spring Mills.

Levis & Kennebec.

This company, which is building a railroad from Point Levis, opposite Quebec, to connect with the Somerset Railroad in Maine, and which has about 40 miles of road in operation, defaulted on the July interest on its first-mortgage bonds. The

reason of the default is said to be that the Government subsidy is exhausted. The bonds are chiefly held in England.

Ligonier Valley.

Arrangements are being made to complete this road, which was graded several years ago from Latrobe, Pa., on the Pennsylvania Railroad, southeast through the Loyalhanna Gap to Ligonier, a distance of 11 miles. The road will open up a region abounding in coal and iron ore.

Meetings.

Meetings are announced as follows: Indianapolis, Decatur & Springfield, annual meeting, at the office in Indianapolis, Ind., Oct. 11, at noon. Ithaca, Auburn & Western, annual meeting, at the office, No. 20 Nassau street, New York city, Oct. 1, at 2 p. m. Northern Pacific, annual meeting, at the office, No. 23 Fifth avenue, New York, Sept. 26, at noon.

Montclair & Greenwood Lake.

It is reported that this company has concluded an agreement with the Delaware, Lackawanna & Western to maintain similar rates on suburban passenger traffic to the points where the two roads come in competition. It is said that the abandonment of the Watchung Branch was the result of this agreement. It is also reported that the company is negotiating for the use of the Delaware, Lackawanna & Western track from West End Junction to Hoboken, and of its depot in Hoboken. It is now dependent upon the New Jersey Midland and the Pennsylvania roads for terminal facilities.

Missouri, Iowa & Nebraska.

Negotiations are in progress for changing the eastern terminus of this road from Alexandria, Mo., to Keokuk, Ia. The use of the St. Louis, Keokuk & Northwestern track can be had, and the Keokuk people offer to give any right of way needed and the necessary ground for depot buildings and shops.

Mobile & Ohio.

A dispatch from Memphis, Tenn., dated Sept. 3, says: "Judge Trigg, of the (United States) Circuit Court, has rendered a decree in favor of Wm. Butler Duncan and others, trustees, against the Mobile & Ohio Railroad, setting forth that the Tennessee substitution bonds constitute a prior lien on the road in the limits of Tennessee, and ordering the sale of that portion of the road to liquidate them."

This decision supports the action of the Bondholders' Committee, which has provided for the Tennessee substitution bonds by admitting them on an equality with the first-mortgage bonds. Their prior lien, however, was disputed by some of the bondholders.

Nicaragua.

The Government of Nicaragua proposes to build a railroad from the port of Corinto, on the Pacific coast, by way of Realajo, Chinandega and Leon, to a point on Lake Managua. The distance is about 70 miles, through a fertile, healthy and prosperous country; there is already a traffic of about 30,000 tons per year carried over the proposed line by wagon and boat, and this, it is believed, can be increased when better means of transportation are provided. It has been decided to adopt a gauge of 3 ft. 6 in., and to use iron rails of from 36 to 42 pounds per yard, or steel rails of from 30 to 36 pounds. The road will be constructed to carry a maximum weight of three tons per wheel, the maximum speed to be 25 miles per hour.

New York & Manhattan Beach.

This company has decided to proceed immediately with the construction of the unfinished section of its road from East New York to Greenpoint, the northern section of Brooklyn. This part of the road will be built with a double track, and it is also intended to put down a second track from East New York to Coney Island and Bay Ridge before another season. From Greenpoint ferries run across the East River to Tenth street and Twenty-third street in New York, affording access to the upper part of the city. The road is reported as doing a very good share of the Coney Island excursion business, which is larger this year than ever before.

New Jersey Midland.

The earnings of this road for July and for the seven months ending July 31 were as follows:

	July.	Seven months.
Passengers.....	\$13,502 77	\$75,027 68
Freight.....	25,124 81	144,254 47
Milk.....	20,555 50	108,361 84
Express, mail, etc.....	4,306 38	48,708 11
Total.....	\$63,489 51	\$376,352 10
Working and terminal expenses.....	44,594 27	280,241 53
Net earnings.....	\$18,895 24	\$87,070 57
Per cent. of expenses.....	70.24	76.86

The Receiver's account for the month is as follows:

Balance, July 1.....	\$219 08
Road Receipts, as above.....	63,489 51
Suspense account.....	1,000 00
Loan account.....	1,828 86
Total.....	\$69,537 45
Expenses, as above.....	\$44,594 27
Middletown, Unionville & Water Gap lease.....	4,800 00
Montclair & Greenwood Lake R. R., terminals.....	2,999 64
Right of way claims.....	3,076 26
Equipment, payments on cars.....	1,719 05
New construction.....	2,246 17
Interest, discount and insurance.....	3,617 29
Loan account.....	5,266 50
Total.....	\$71,719 18
Balance, Aug. 1.....	\$1,818 27

As compared with 1876 the earnings for July show a decrease of \$1,156.96, or 1.8 per cent., and for the seven months an increase of \$25,701.69, or 7.3 per cent.

During the last two years many improvements have been made in the condition of the road. The high trestles at Hackensack and west of the Passaic River at Hawthorne have been nearly all filled in and a commencement made at the West End trestle. Several smaller trestles have been filled in and a good deal of work done in widening and ditching the road bed. A large number of new ties and a good deal of new iron have been laid, and the road is in better condition than ever before, though, from its location, it is a difficult road to maintain. Three spans of new Howe truss have replaced the old combination bridges at Hawthorne, at Dundee and near Stockholm. There has also been a perceptible improvement in the running of the road and the promptness and regularity of the train service. The equipment has been increased, but is barely sufficient for the necessities of the road.

Ogdensburg & Lake Champlain.

This company is now offering for sale at par and accrued interest \$600,000 new 6 per cent. first-mortgage bonds. Of the proceeds \$500,000 are to be used to pay off that amount of equipment bonds, \$300,000 of which fall due Jan. 1, 1878, the rest Jan. 1, 1879. The remaining \$100,000 are to be used in paying the expenses incurred in recovering the road from the Central Vermont and in permanent improvements of the property. The road is 118 miles long and the funded debt, exclusive of the \$500,000 equipment bonds, consists of \$468,000 sinking-fund bonds due in 1890.

Ohio & Mississippi.

The United States Circuit Court having authorized the Re-

ceiver to pay out of any available earnings of the road the coupons due Jan. 1, 1877, on the first-mortgage bonds, it is stated that they will be paid Oct. 1, in New York.

Pennsylvania.

The proposition of this company as to the goods in transit destroyed by the rioters at Pittsburgh does not meet with unqualified acceptance. At a meeting held in Philadelphia, Aug. 30, a number of merchants being present, opinions from counsel were present stating that losers of freight had not a very strong case against Allegheny County, but had a good one against the company. It was also urged that the litigation might be almost indefinitely prolonged, to the great damage and loss of claimants. It was finally proposed that the company's plan of joining all claimants with it in a suit against the county be accepted, provided the company will guarantee that claimants shall receive their money within a fixed time, say two years. This proposition was generally approved, and a committee appointed to confer with the offices of the company.

No conference has yet been held, owing to the absence of President Scott.

Pittsburgh, Virginia & Charleston.

This road has been completed from the old terminus at Monongahela City, Pa., southward up the Monongahela River to Brownsville, a distance of 23 miles. Trains are now running on this extension, which has been under construction for some time. The new stations, with the distances from Pittsburgh (Monongahela City being 31 miles) are: Webster, 35 miles; Lock No. 4, 39; Belle Vernon, 42; Fayette City, 45; California, 50; Brownsville, 54.

Penn Yan & Dresden.

A company has been organized to build this road, which is to be about four miles long, and is to connect the town of Penn Yan, N. Y., with the Syracuse, Geneva & Corning at Dresden. The capital stock is fixed at \$60,000, nearly all of which has been subscribed.

Rhode Island & Massachusetts.

Regular trains began to run over this new road Sept. 3. It is leased and worked by the New York & New England Company, and forms a branch of that road from Franklin, Mass., southward to Valley Falls, R. I., 14 miles.

Reno & Truckee.

The old project for a direct line from the Central Pacific at Reno, Nev., to Virginia City has been revived and it is said that local interests have promised to subscribe a large part of the capital needed. A road very much shorter than the Virginia & Truckee, the existing line, could be built, but high grades and some very heavy work would be required.

St. Louis & Southeastern.

The report of the Auditor, Mr. E. Young, for the month of July is as follows:

	St. Louis Div.	Kentucky Div.	Tennessee Div.	Whole line.
Gross earnings.....	\$48,654 90	\$36,269 64	\$11,532 35	\$96,456 89
Expenses.....	39,163 69	22,279 83	10,078 29	71,521 81
Net earnings.....	\$9,491 21	\$13,987 81	\$1,454 06	\$24,933 08
Earnings per mile.....	207 93	370 08	240 26	273 83
Per cent. of expenses.....	80.69	61.43	87.39	78.30

As compared with July, 1876, the whole road shows an increase of \$2,038.31, or 2.3 per cent., in gross earnings; an increase of \$4,169.41, or 6.2 per cent., in expenses, and a decrease of \$2,141.10, or 9.2 per cent., in net earnings. The increase in gross earnings was entirely on the Kentucky Division, the increase in expenses on the St. Louis Division.

Selinsgrove & North Branch.

On application of some of the creditors a receiver was recently appointed for the property of this company, which consists chiefly of right of way and some graded road-bed. The company began some years ago to build a road from Fort Trevorton, Pa., by way of Selinsgrove to Mifflinburg, about 40 miles, but no part of the road is finished.

Spartanburg, Union & Columbia.

The repair shops of this road are being removed from Union, S. C., to Spartanburg, where new shops are being built and will be occupied and used jointly by this company and the Spartanburg & Asheville.

St. Louis, Iron Mountain & Southern.

Messrs. M. G. & G. C. Ward, the New York agents for Baring Brothers & Co., have published a notice advising bondholders not to sign the new agreement for funding coupons proposed by the company. They state that the bonds represented by them, between five and six millions of dollars, will not agree to the funding arrangement under any circumstances.

St. Louis, Marine & Edwardsville.

It is reported that the owners of this road have sold it to the Wabash Railway Company, which will work it as a branch of its St. Louis Division. The road is eight miles long, from Edwardsville, Ill., to Edwardsville Crossing on the Chicago & Alton. It has been twice sold under foreclosure, once in 1872 and again in 1875, and has been known at different times as the Edwardsville Railroad, the Madison County Railroad and by the present name. It is one of the oldest railroads in Illinois.

St. Joseph & Des Moines.

A company by this name has been organized to build a narrow-gauge railroad from St. Joseph, Mo., northeast to Albany in Gentry County, 45 miles. The capital stock is fixed at \$225,000.

Scioto Valley.

The grading of the extension from Chillicothe, O., to Portsmouth is nearly all finished. A large number of ties have been purchased, and the tracklayers are at work from Portsmouth northward. The trestle-work and bridging are well advanced.

Union Railroad, Transfer & Stock Yards.

The work on the railroad of this company, better known as the Indianapolis Belt road, is now well advanced. A large part of the grading is done, the bridge over White River is partly in place and the rails are being laid. The extensive stock yards of the company are enclosed and work is in progress on the buildings. The road is intended to connect the various lines entering Indianapolis by tracks outside the city.

Watchung.

This road, which extends from Woodside Junction westward about four miles to West Orange, N. J., has been for some time operated by the Montclair & Greenwood Lake Company, but on Sept. 1 that company withdrew all the equipment and ceased to run passenger trains over the road. It is understood that a freight train will be run for some weeks longer for parties who have freight contracts to fill. The reason given for this action is that the road did not pay expenses. Recently an attempt was made to attract business by reducing the rates, but it did not succeed and was abandoned after a few days' trial.

A singular proposition has been made by Mr. Wm. O. McDowell, who offers to run the road on his own responsibility until some further arrangement can be made. He only asks that the Montclair & Greenwood Lake Company stop its trains

